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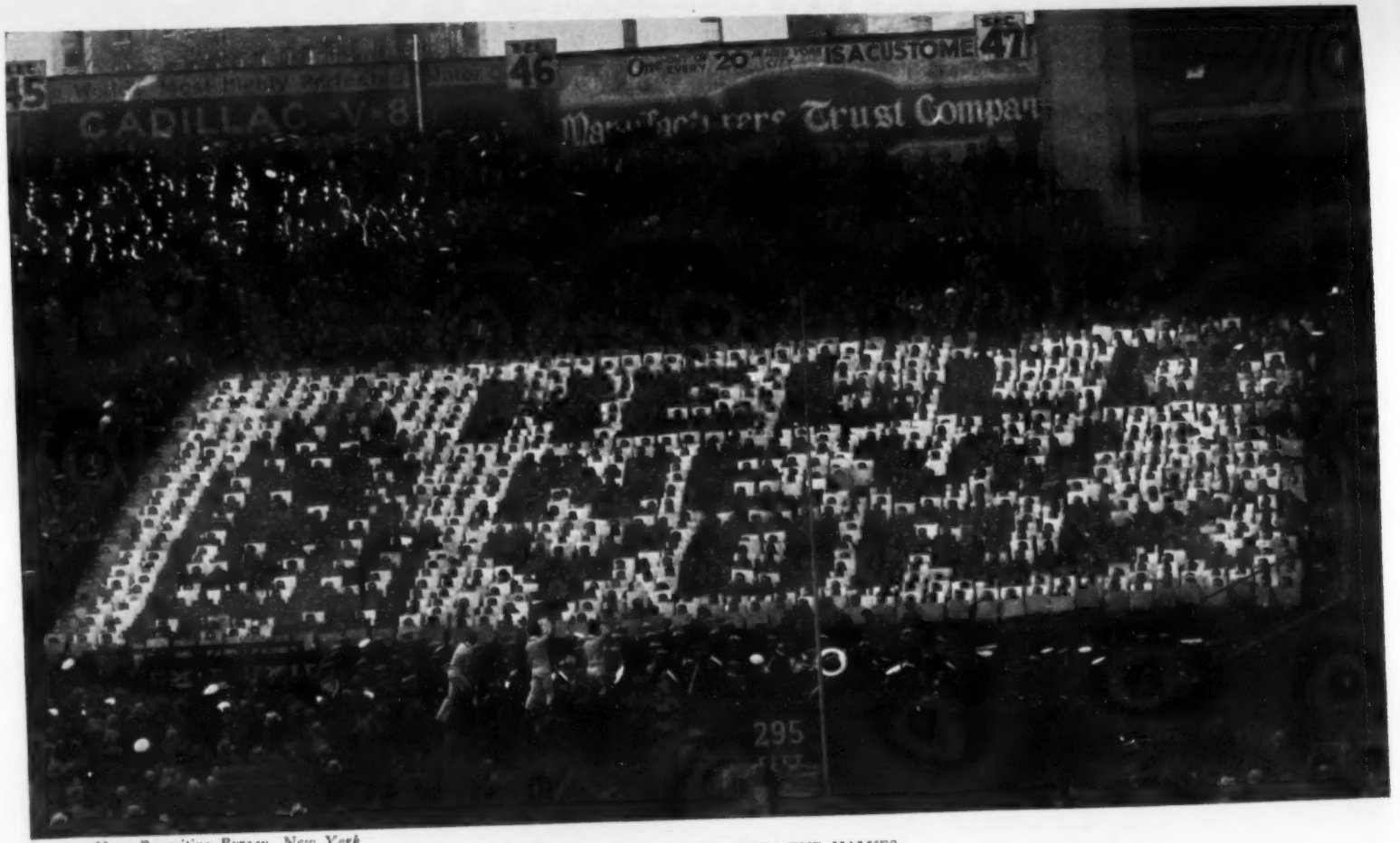
THE REGIMENT OF MIDSHIPMEN AT THE ARMY-NAVY FOOTBALL GAME, 1930

P. & A. Photo

THE CADETS MARCHING ON THE FIELD
Army-Navy game, 1930

P. & A. Photo

THE CADETS MARCHING ON THE FIELD
Army-Navy game, 1930



Courtesy Navy Recruiting Bureau, New York

THE NAVY STAND BETWEEN THE HALVES
Army-Navy game, 1930. This shows one of the card designs being used by the midshipmen.

Associated Press Photo

ARMY ATTEMPTING TO ADVANCE ON LEFT SIDE OF NAVY LINE
Army-Navy game, 1930. The back carrying the ball is Stecker.

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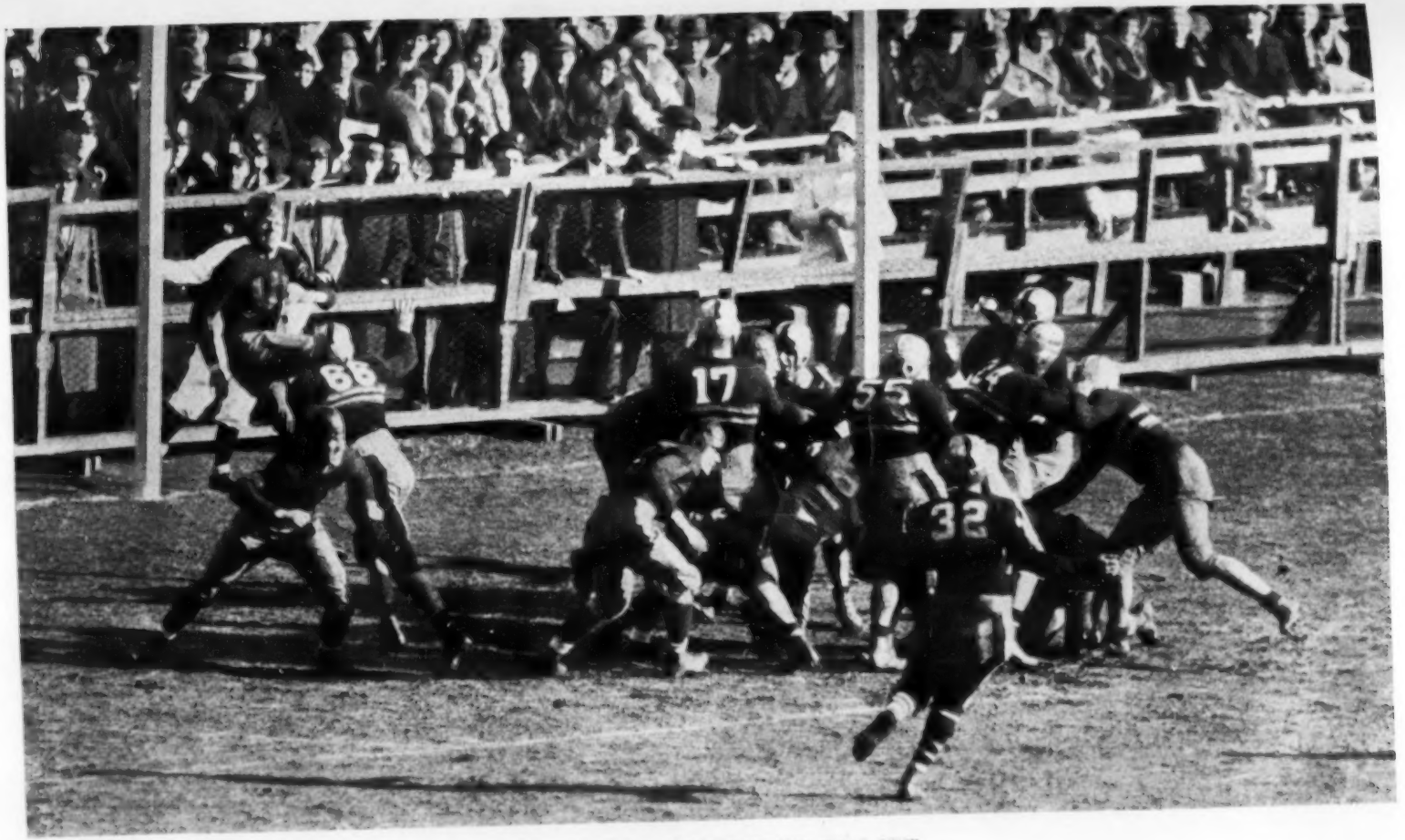
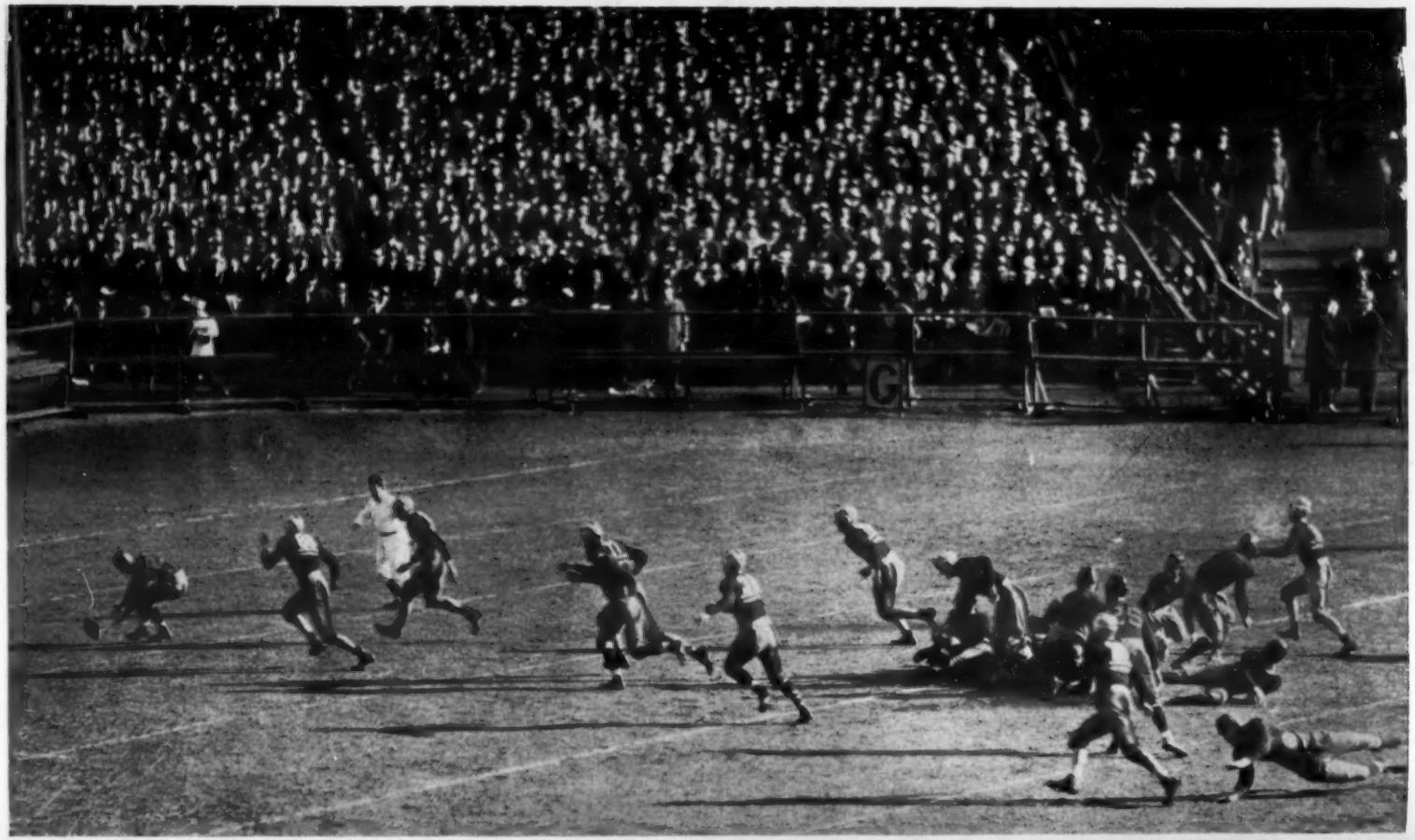
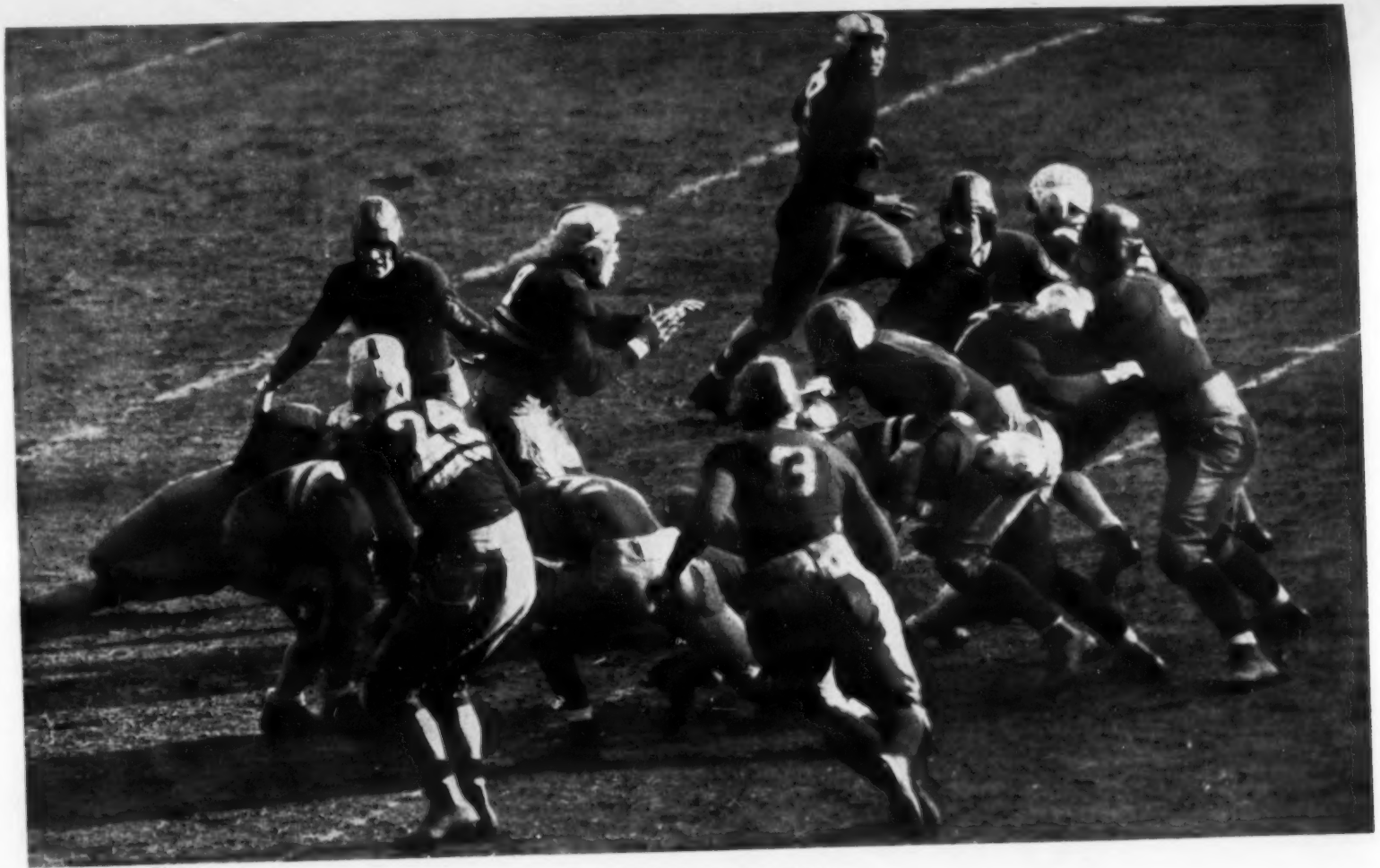


NAVY PUNTS FROM BEHIND THE GOAL LINE
Army-Navy game, 1930.



NAVY RECOVERS A FUMBLE CLOSE TO THE GOAL LINE
Army-Navy game, 1930

NAVY RECOVERS A FUMBLE CLOSE TO THE GOAL LINE
Army-Navy game, 1930



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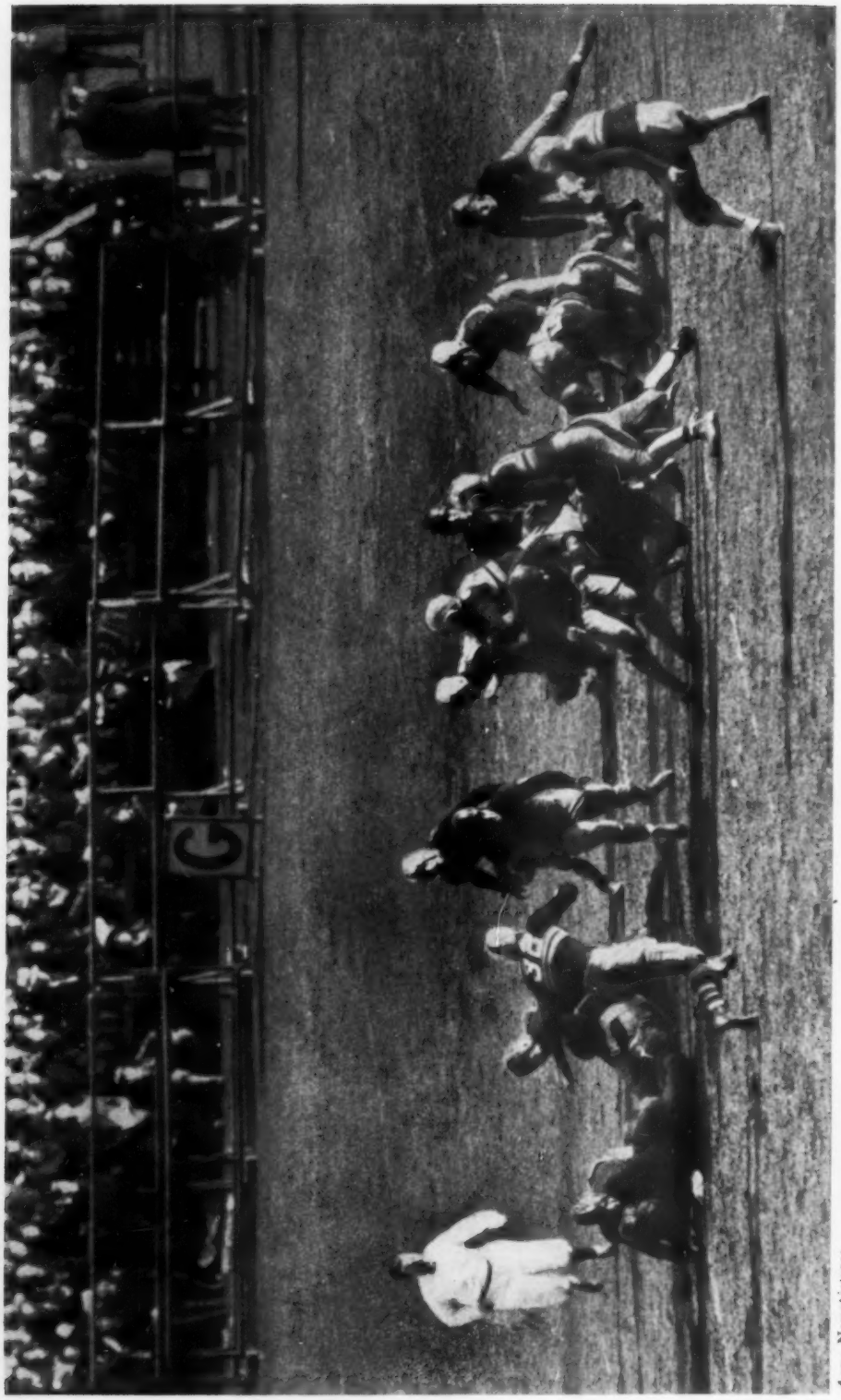
A CLOSE-UP OF LINE PLAY
Army-Navy game, 1930



NAVY ADVANCES THE BALL
Kirn is carrying the ball and is about to be tackled by Kilday.

Acme Newspictures

UNITED STATES NAVAL INSTITUTE PROCEEDINGS

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NAVY ADVANCES THE BALL
Kim is carrying the ball and is about to be tackled by Kilday.

WAR

By Major General John A. Lejeune, U. S. Marine Corps (Retired)

Paper read before the Fortnightly Club, Lexington, Virginia

I REALIZE that the subject I have selected is altogether too vast to be treated fully in a brief article or for that matter in a treatise which would completely fill Dr. Eliot's famous bookshelf. At this time, I can hope, therefore, to discuss only a few of the multitude of questions connected with the subject under consideration.

In all probability, warfare is as old as the human race, having had its origin in the jungle, when man was as savage as the wild beasts that surrounded him. War was necessary, then, for his survival, including, as it did, not only the struggle of man for life and existence against the four-footed savage, but, also, against his primitive brother who competed with him for the possession of food, a dwelling place, or a mate, or who, for any other reason, aroused his envy, his covetousness, or his hatred.

At first war was a combat between individuals, similar to the combat described in Genesis between Cain and Abel, in which Cain slew Abel but received a mark on his brow which stamped him as the murderer of his brother. Already man had progressed to the point where human life was regarded as somewhat sacred, and the slaying of a man by his brother was deemed to be a crime.

Combat between individuals in the form of the duel, however, was recognized as an unavoidable institution in practically all civilized countries, until comparatively recent years. As conducted, under the dueling code, the elements of deceit and brute strength were eventually eliminated, or, at least, minimized, and it became chiefly a test of the skill of the combatants in the use of weapons combined with a test of their courage. It was invoked, usually, to decide questions of honor only, and not for the decision of questions affecting the possession of property or acts of trespass, or disputes over civil damages; such questions, many centuries ago, having passed under the jurisdiction of courts of some description.

Murder, however, although outlawed in the dawn of civilization by all peoples, notably in the case of the Hebrews in the Sixth of the Ten Commandments brought down by Moses from Mount Sinai and proclaimed as the law of God, still continues, with more or less frequency, in every nation on earth, in spite of the law and in spite of capital punishment for the violation of the law.

Warfare between individuals, in all probability, was soon supplemented by warfare between families. The family, at a very early date, became the unit of government and of defense and offense. The head, or patriarch of the family, ruled it and cherished it, and all the members of the family were banded together for the common defense and the common welfare. Animals lose the sense of responsibility for their offspring as soon as they are able to shift for themselves, but the human mother and father continue to care for and to attempt to guide theirs as long as they live. In this,

the human savage, in all probability, was differentiated from the animal savage, not long after his creation. The family tie, therefore, became stronger and stronger, and warfare between family groups has occurred frequently in all stages of civilization, and even in my own lifetime has been carried on not only by untutored mountaineers as in the case of the Hatfield-McCoy feud, but also by highly cultivated family groups as in the case of the Liddell-Jones feud in Louisiana.

Man's ability to organize and his executive capacity were powerful factors, too, in enabling him to survive in an environment in which he was constantly exposed to death by violence, by exposure, or by starvation. The family unquestionably evolved into the clan in an early era and as such consisted, not only of the immediate family, but also of the relatives of the patriarch and of their retainers. In the course of years, many of these clans increased in size to such an extent as to become tribes and finally, when stabilized or localized, took on the character of states or nations. These clans or tribes were organized chiefly for protective purposes, and they waged almost constant warfare with neighboring units of the same kind. They fought for the exclusive use of hunting grounds, or for the control of fertile areas in which life could be easily sustained, or for the possession of grazing fields for their flocks and herds which they had gradually accumulated.

As the population of an area increased in density, whole or parts of tribes migrated to less densely settled areas and there struggled fiercely with those already in occupation for the possession of the land. Forays against each other for excitement and for the capture of loot, cattle, sheep, or prisoners whom they usually enslaved were frequent. Gang warfare in our great cities today is not altogether unlike the combat which existed thousands of years ago among our remote ancestors.

Every American is familiar with the stories of tribal wars on this continent. They kept the aborigines in a constant state of turmoil as similar combats did the clans of the highlands of Scotland, while the hardy Vikings of Northern Europe crossed stormy seas in cockleshell boats in order to harry, to rob, and to conquer the more peace loving people of England, France, and other lands.

Man has always been restless and warlike and has always sought new worlds to explore and to conquer, but was eventually driven by the pangs of hunger, as the numbers in his tribe or clan increased, to stabilize for a while so that he might cultivate the ground in order to provide a sufficiency of food to supplement that which he obtained by the chase or from his flocks or herds.

The fertile valleys of the Nile and the Euphrates appear to have been the domiciles of the earliest civilized peoples. There the famous cities of greatest antiquity were located. There still remain the ruins of Ur, Babylon, Thebes, Memphis, and many other centers of population which are now being excavated and explored by antiquarians who are constantly finding ancient writings proving the existence of highly organized states of society and of more or less efficient forms of government. Always there seem to have hung over the people like a pall, the sinister cloud of war.

Their kings or other rulers were chosen because of their military prowess, and wars between these city states went on almost continuously. Most to be feared, however, were the warlike people of the forest and of the desert. Over and over again we read of their conquest of the less hardy and more civilized peoples. When people addicted to the arts of peace came into conflict with those addicted to the art of war, the struggle almost invariably ended in the triumph of the warrior races.

The story was repeated over and over again in later years and it is so recorded in history. For instance, the warlike Greeks in pursuit of the beautiful Helen, vanquished and destroyed Troy; Sparta, then Thebes, defeated the less virile Grecian states; Philip of Macedon, with his semi-civilized followers, conquered the entire Grecian peninsula, and his remarkable son, Alexander the Great, led the Macedonian cohorts to triumph after triumph in Egypt, Syria, Asia Minor, Mesopotamia, Persia, and India.

Later on, the more virile Romans conquered Greece, and her great rival, the Semitic city state of Carthage. They then extended their dominion over the Iberian Peninsula, Gaul, Britain, Egypt, Northern Africa, and a large portion of Asia; Roman legions, too, crossed the Rhine and the Danube, and defeated the Teutonic tribes east and north of these rivers, but their posses-

sion of that area was uncertain and temporary.

Finally, owing to the decadence of the Roman people, the semi-civilized Teutonic tribes drove back the Roman legions, and overran, conquered, and occupied the European provinces of the Western Empire. The Angles, the Saxons, and the Danes occupied Britain, the Franks and the Norsemen conquered Gaul, the Goths and the Visigoths took control of Spain, the Lombards and kindred tribes harried Italy. Finally the Western Roman Empire was erased from the maps of the world. In addition, there were many other invasions of the civilized nations of the world by semi-barbarous tribes such as those which served with Attila and Genghis Khan. The remarkable military successes of the Mongol hordes under the leadership of Genghis Khan and his successors brought nearly all of Asia including the civilized peoples of China and India under their rule. The Great Khan, at the head of a puissant host, vanquished the armies of civilized Europe and penetrated to the very heart of that continent.

Gradually, in the course of centuries, nations were erected on the ruins of the Roman Empire. Their formation, however, was a bloody process. Innumerable wars occurred, not only between those nations, but also between feudal lords of the same nation and between the kings and their own subjects.

Religion, likewise, played a prominent part in the shedding of human blood. I will touch briefly on a few religious wars. A classical example is described in the Bible. I refer to the migration of the twelve tribes of Israel from Egypt to Palestine and the wars which they waged for the possession of the Promised Land. Moses, the leader of the migration, was reared and educated at the court of Egypt. His sympathy and his heart were with his enslaved people and he determined to effect their liberation, their migration, and their establishment in the Promised Land. His people, however, were ignorant, superstitious, and cowardly. Having been slaves and ghetto dwellers for a long period of time, they knew naught of the lore of the wilderness and the desert, naught of the use of weapons, naught of the art of self-government. They had long since abandoned the pure and simple worship of Jehovah and had become addicted to the superstitions and idolatry of the Egyptians. In their abject state, they preferred the misery of their condition to the suffering and the danger which would confront them in an escape from Egypt. On the other hand, their Egyptian masters were loath to give up the slaves who labored for them so efficiently and so industriously.

Moses, himself, stood in need of preparation for his mission of leadership. This he obtained by several years of study and meditation in the Wilderness. Doubtless he improved the opportunity, too, to familiarize himself with the country to be traversed, the location of water holes, water springs, and food supplies, the feasible routes between the two countries, and the conditions, military and otherwise, existing in the Promised Land. On his return to Egypt, he was confronted by two exceedingly difficult tasks. The inertness, the ignorance, and the fears of the Israelites had to be overcome, and, in addition, it was necessary to influence the rulers of Egypt to give their consent to the departure of the enslaved race. These almost insurmountable obstacles, he was, finally, enabled to surmount by the exercise of his extraordinary ability and his phenomenal knowledge of human psychology. In all history there is no clearer demonstration of the truth of Napoleon's dictum that in a great crisis, *the man* is everything.

Moses led a mob out of Egypt and, after holding his followers in the wilderness for forty years, stimulated their religion and racial spirit and self-government. His successor, Joshua, led a warrior race into the Promised Land of which every man and every woman except Joshua had been born and reared in the wilderness. It is not astonishing, therefore, that they should have decisively defeated the tribes then in occupation of the "Land which flowed with milk and honey," destroyed their cities, and ruthlessly butchered their men, their women, and their children. Religious fanaticism, combined with the toughening process they had undergone, made them invincible in battle and merciless in dealing with the defeated foe.

The following excerpts from the book of Joshua indicate that modern warfare, even with all its new implements of death and destruction, is humane and merciful by comparison with that waged by the chosen people: "And the Lord said unto Joshua, 'Fear them not, for I have delivered them

into thine hand; there shall not a man of them stand before thee.' Joshua therefore came unto them suddenly and went up from Gilgal all night, and the Lord discomfited them before Israel, and slew them with a great slaughter at Gibeon, and chased them along the way that goeth up to Beth-horon, and smote them to Azekah, and unto Makkedah. And it came to pass as they fled down from before Israel, and were in the going down to Beth-horon that the Lord cast down great stones from heaven upon them unto Azekah and they died; they were more which died with hailstones than they whom the children of Israel slew with the sword."

Joshua, at this point, gave thanks for the victory and in so doing recited a verse from an ancient Hebrew poem as follows:

Sun stand thou still upon Gibeon
And thou moon, in the valley of Ajalon.
And the sun stood still and the moon stayed
Until the people had avenged themselves upon their enemies.

So much for the Amorites. Upon a later occasion his success was equally complete. "So Joshua smote all the country of the hills, and of the south, and of the vale; and of the springs; and all their kings: he left none remaining, but utterly destroyed all that breathed, as the Lord God of Israel commanded."

For the next example of religious warfare, we will pass from B.C. to A.D., or more specifically from Moses to Mohammed. Mohammed, an illiterate Arabian camel driver, succeeded in creating a religious movement among the Arabs, which gained so rapidly in momentum that, in a comparatively short period, his fanatical followers were able to conquer and to proselyte nearly all of Asia. They also carried the crescent in triumph to Northern Africa and across the Straits of Gibraltar into Spain and Portugal. After bringing nearly all the people of that peninsula under subjection, a powerful Saracen army invaded France and reached the great plain south of Tours, where they were overwhelmed in battle by the hosts of Christendom under the leadership of Charles Martel, the illegitimate half brother of the King of the Franks. This decisive victory probably saved Europe from becoming Moslem, and so heartened the Spaniards that after a state of constant heroic warfare extending almost to the discovery of America, they finally were successful in expelling from Spain the Moorish King Boabdil and his followers.

Farther East, at a later period, the militant Ottoman Turks ultimately succeeded in vanquishing the Eastern Empire and in occupying its capital city, Byzantium, and all of the territory south of the Danube including Greece and the adjacent islands. Even today, St. Sophia is a Mohammedan mosque and the authority of Kemal Pasha, the present ruler of Turkey, extends over Constantinople, Adrianople, and a small portion of the European hinterland.

The successes of the Moslem Saracens in the Holy Land eventually brought on another series of religious wars, known as the Crusades. Christendom having been thoroughly aroused by the fervid eloquence of Peter the Hermit, a great evangelist, made one mighty effort after another to reclaim the sacred places of the Holy Land from the "impious" control of the Mohammedans, and religious fanaticism was thus, again, responsible for repeatedly drenching the ancient home of the Israelites and its approaches with human blood.

Not content with these religious wars, the nations of the Old World were engaged almost constantly in wars against each other. Wars of succession or dynastic wars were frequent as were wars for the annexation of adjacent territory, wars for the possession of newly discovered areas, and wars of the strong against the weak for the purpose of subjugating them and destroying their independence. Civil wars, also, were frequently waged, and these increased in number and in violence after Martin Luther and his Protestant contemporaries hurled the javelin of Protestantism full in the face of the Established Church. In fact from one cause or another warfare continued almost without cessation in Europe until after 1815, when with the incarceration of the Emperor Napoleon Bonaparte on the Island of St. Helena there came a period of peace.

In America, too, warfare was the normal state of its settlers from its discovery until a little over a century ago. First, there were wars between the aborigines and the white men, combined with strife between the newly arrived settlers of different nationalities and finally the struggles between the colonists and their mother-countries to obtain self-government. The first of the latter class of these wars was begun at Lexington

in 1775, and the last ended in 1898 when the Spanish troops finally evacuated Cuba and Porto Rico.

After Waterloo and New Orleans in 1815, the civilized nations of the world except in Latin America appeared, for a time, to be war weary and to be anxious to heal the wounds of war and to cultivate the arts of peace. This spirit, however, gradually vanished with the death of the veterans of the wars of the Napoleonic period. The new generations to whom international or national combats were unknown were eager to undertake what they regarded as man's greatest adventure.

The United States and Mexico led off, and were soon followed by Great Britain, France, Turkey, and Russia in the so-called Crimean War. Then there occurred the brief conflict between France and Austria which ended with the battle of Solferino. Then came the bloody war between the states in our own country, which again, for a while after its close, seemed to cause an aversion to armed conflict on the part of those who had participated in it. Following very soon after it were the Prussian-Austrian, the Franco-Prussian, and the Turco-Russian wars. Thereafter for more than a decade the world was free of major combats, until there came in rapid succession the China-Japanese, the Greco-Turkish, the Spanish-American, the British-Boer, and the Russo-Japanese wars.

Europe was once more in a ferment. National and racial jealousies, commercial rivalries, military and naval competitions, lost or unredeemed territories, offensive and defensive alliances, territorial acquisitions—all these pointed to the occurrence of a major catastrophe. Minor fires such as those in the Balkans were partially extinguished without becoming a great conflagration, but many embers continued to smoulder. Most men and women in America and many in Europe refused to believe that another general conflict would be precipitated. They blinded themselves to the conspicuous signs which they should have been able to read. They did not face the facts, but calmed their fears by the repetition of parrot-like shiboleths such as: a major war is unthinkable; the rulers of civilized nations would not dare to permit a conflict whose consequences could not be foreseen; the people would revolt rather than go to war; the laboring classes would decline to fight each other; the cost of a modern war would be so great as to bankrupt the participants within a few months; the great bankers and other financiers would refuse to finance such a war; etc.

Americans deemed themselves secure, and with the exception of a few, felt certain that the oceans which separated their country from the Old World would serve as effectual barriers to our being drawn into participation in such a war. American pacifists, in fact, went so far as to demand the complete disarmament of their country as a preventive for its entry into war. They appeared to have forgotten that a close approach to a state of national disarmament had been in existence in the United States from prior to 1775 until 1899, except during actual hostilities, and that during the period mentioned, the United States became involved in four foreign wars and one civil war.

Suddenly, in the midst of all this futile discussion, there was a shot fired by an obscure man, in an obscure town, of an obscure province of the Austro-Hungarian Empire which killed a prince.

Ominous quiet prevailed for a month, then the explosion came.

Ultimatums, mobilizations, hysterical attempts at eleventh-hour interventions, hostile acts, invasions, declarations of war, battles, death, and destruction followed each other in rapid succession, and the world endured more than four years of unprecedented agony. The cost in treasure and in life has not yet been accurately estimated. It was prodigious, it was appalling, and the nations involved in it have, as yet, scarcely reached the convalescent state. In fact they and all other nations are now suffering from the aftermath of war in the form of a severe economic depression.

It is time for us to search our hearts and seek a remedy. What does the future hold in store for the world? Has warfare ceased forever, or will it continue to be one of man's chief occupations, as in the ages that have gone by? What should be done by civilized people to prevent, or at least to make less frequent the coming of this, the most terrible of scourges? Specifically what should our own country do to assist in preventing the recurrence of war while at the same time providing for its own security?

Needless to say, complete or satisfactory answers to these questions are beyond any one's power to give. We can only grope about in the fog of uncertainty which prevails and endeavor to lay hand on a few salient facts. The obstacles to be surmounted in the quest for permanent peace are at best, well nigh insuperable. The sketchy summary of the history of warfare which has just been given indicates that men individually and collectively are essentially pugnacious and combative. They seem always to stand ready to defend what they have, or to take what they want when they want it.

Economic stress, for one thing, drives men to combat. To satisfy hunger is instinctive. Men have always preferred death in battle to death by starvation. This trait they hold in common with animals. The chief difference is that men are gifted with the faculty of reason and can foresee the ultimate effects of existing conditions, in consequence of which they seek to better those conditions, if unsatisfactory, first by diplomacy and then by war.

Nations which are becoming overcrowded demand suitable sparsely settled areas for their surplus population as their right. Nations with insufficient natural resources scheme and plan to gain land flowing with gas and oil, or that which contains coal, iron, copper, or other minerals, or sufficient food-producing areas. Competition for foreign trade is likely to be a fruitful cause of war, and the possession by a weak people of a disproportionate share of the good things of the world stimulates the covetousness of stronger and more virile races. The decadence of a nation constitutes a constant temptation to its neighbors. Revolutionary changes in the government or in the economic system of one nation are likely to cause similar revolutions among neighboring peoples.

Fanaticism—religious or otherwise—such as the fanaticism of the Russian communists, may eventually bathe large parts of the world in blood as did the fanaticism of the abolitionists and slave-owning classes in our own war between the states. Racial or national hatreds, fear complexes, international injustices, oppression of the weak by the strong, sudden bursts of anger or rage over isolated events such as the destruction of the *Maine*, the assassination of the Crown Prince of Austria, the massacre of Christians by the Mohammedans or the heathen, may again serve to precipitate conflicts. In this age, it should be easier to stir the souls of men to their depths by radio broadcasting and newspaper propaganda, than when Peter the Hermit tramped from place to place in Europe and preached the Crusades.

Internal disturbances are always imminent. The Russian revolution hangs menacingly over the heads of European rulers and governments. Revolutions on this continent have been so frequent of late that they cause no more excitement in the United States than does gang warfare in one of our large cities. Frontier barriers which stop or check the ebb and flow of populations and cause artificial and unnecessary restraints on trade make for unfriendliness and are potential causes of war.

It would be easy to enumerate many more symptoms or causes of the national or international disease known as war, but enough has been said on the subject to make it probable that everyone will agree that to find a way or ways to eliminate future wars is the most difficult problem which confronts mankind at this time.

It was, however, announced *ex cathedra* that the World War was waged in order to end wars. Let us therefore turn our attention briefly to what has been accomplished in that direction since the Treaty of Versailles was signed. Although that treaty was far from perfect, the inclusion in it of the constitution of the League of Nations which provides a concrete plan intended to maintain world peace was believed to mitigate its severity. The league, however, has not functioned as satisfactorily as was hoped by its creators chiefly because of the failure of the United States and Russia to give their adherence to it, but, nevertheless, it has exercised a powerful influence in favor of peace.

The Locarno Treaty between Great Britain, Germany, and France was fostered by the league, while the settlement of the disputes between Greece and Turkey, Greece and Italy, and Sweden and Finland were either directly or indirectly attributable to its influence. The so-called Dawes and Young plans, the financial rehabilitation of Austria and Hungary, the temporary adjustment of the boundary controversy between Poland and Germany, the evacuation of the Ruhr district and the Rhineland by

French and British troops, the Briand-Kellogg Treaty outlawing war as a national policy—all these are evidences of the pacifying influence of the league.

The World Court seems fitted to become the international law court of last resort to whose decisions all member nations must bow or else be held responsible for precipitating war.

Shall all this machinery continue to function, to improve, and to increase in influence, or shall it be allowed to deteriorate and to become rusty from disuse, until it is scrapped, is the question that is up for decision by each nation.

Personally, I believe the league should be actively supported by our own country. Even though it be only a "noble experiment," it does offer the probability of so evolving as to become beneficently powerful. To support it, its opponents state, would involve the ultimate surrender of certain jealously guarded national rights. However, each party to an effective treaty necessarily surrenders some of these so-called rights. In treaties with Great Britain, Japan, and other nations, the United States, now the richest and most powerful country on earth, has recently agreed to limit the number and the size of the various units of its fleet, as well as the caliber of its naval guns, to leave the island of Guam unfortified, to cease extending the fortifications of the Philippines, and to avoid the recourse to war except in self-defense.

Why, therefore, should not the United States be willing to go two steps further on the road towards universal peace by giving its adherence to the World Court and to the League of Nations? I can see no adequate reason for its refusal to do so. Certainly, with membership in the court and the league, its security and its other national rights would be better protected, than would be the case should it occupy a position of proud isolation and the league should degenerate into a world alliance against it. In this latter event, preparation for war, and war itself, would again become the chief occupation of mankind in general and of our own people in particular. That such an alliance is not beyond the bounds of probability is now the conviction of many thoughtful and farseeing men.

On the other hand, to remain outside the World Court and the League of Nations and, at the same time to reduce the components of national defense to a state of impotency, as has been advocated by many men and women of prominence, constitute a fatally weak policy which would eventually involve us not only in war but, what is far worse, in defeat and in despair.

Another alternative—that of scrapping the League of Nations and the World Court thereby leaving the world in much the same situation in which it was before 1914—is a solution it is appalling to contemplate.

So far as our own country is concerned, it appears the part of wisdom for it to enter the World Court and later on to give its adherence to the League of Nations. These acts combined with a determined insistence on maintenance of an adequate state of national defense offer, in my opinion, the best insurance against war and provide for a reasonable security against domestic violence or foreign aggression.

In brief, I submit that if the League of Nations and World Court are worth sustaining, we should do our full share to aid the other nations of the world in their effort, and it is my opinion that both the court and the league are worth sustaining.

In any event, whether we join the League of Nations and the World Court or not, it is the manifest duty of our people, while maintaining their own national self-respect, to cultivate, in their hearts, the sentiments of good will and brotherly love towards all other peoples, or more specifically, to be peace loving but not supine; enlightened but not decadent; merciful but not lacking in virility; helpful to the world but not afraid of the world; just and honorable in all dealings with other nations but determined not to submit to injustice; earnestly desirous of arbitration and the peaceful settlement of all international difficulties but always prepared to submit the decision to the arbitrament of arms should it be found that recourse to that tribunal is unavoidable; anxious for peace and slow to wrath but, having been compelled to draw the sword, to throw the scabbard away until victory shall have been gained, and, finally, when peace has been attained, to treat the defeated foe with magnanimity and to endeavor to heal promptly the wounds inflicted during the war.

EXPLOSIVES

By Lieutenant Elliott B. Strauss, U. S. Navy

A MODERN navy has for its sole purpose the placing of explosives where they may most harm an enemy. The elaborate organization of tactics, gunnery, engineering, communications, and supply have for their end the shattering burst of a shell, the rending explosion of the war head, the geyser of the moored or floating mine, and the swift drop of an aërial bomb. The naval officer then should be familiar with the properties and peculiarities of this most essential of his servants—the explosive.

The property which characterizes an explosive is its ability to liberate its energy almost instantly on the application of a suitable initiating impulse. In the case of common explosives the initiating force is usually a blow, friction, flame or spark, chemical agent, or the detonating wave of another explosive. The energy is derived by the transformation of a small quantity of solid or liquid into a large quantity of gas with the accompanying heat. No matter whether the chemical reaction is endothermic or exothermic, the explosion itself is always exothermic. The heat given off is not only energetic in itself but it causes the generated gases to expand and increases their ability to do work. Almost all practical explosives, though they may vary in character from tough, horny, and translucent smokeless powder to fine, crystalline, sparkling fulminate of mercury, owe their efficiency to the fact that they can liberate their lightly held NO_2 radical into gaseous form. The principal exception to NO_2 explosives is the chlorate class in which potassium chlorate, for instance, is used in some detonating compounds. The products of explosion are mainly carbon dioxide and monoxide with some water. The presence of carbon monoxide renders the gases poisonous in many cases.

A question which is often asked about an explosive is "what is its strength compared to that of another explosive?" It is difficult to give an exact answer. Mechanical energy alone is not enough to define explosive strength. It is almost safe to say that the more violent an explosive the less real energy it develops. All explosives have less actual work-producing power than have the common fuels, as shown by the following table taken from Colver's book, *High Explosives:*

1 lb. fuel oil	5,500 calories
1 lb. coal	3,650 calories
1 lb. wood	1,600-1,800 calories
1 lb. nitroglycerin	730 calories
1 lb. fulminate of mercury	185 calories

Perhaps the best indication of strength is summed up in the term brisance, which may be roughly described as briskness or shattering effect. This is not an absolute quality for a given explosive. It is subject to variables such as density, quantity involved, and similar conditions. There is a brisance meter by means of which an attempt is made to determine this quality by having a given quantity of the substance compress a cylinder of lead or copper somewhat in the manner of the Rodman pressure gauge. Brisance may be calculated from the formula $B = d(E/t)$, where B is brisance; E, energy available; d, concentration of energy or energy density; and t, speed with which energy is liberated, or the velocity of detonation.

The velocity of detonation of practically all explosives is accurately known. This determination is accomplished by means of an instrument known as Mettegang's apparatus which is very similar to the chronoscope with a revolving soot-covered drum, used in ballistic work. One end of a train of explosive about a meter long is lighted with an electric spark and the time required for the explosition to reach the other end is accurately recorded on the drum. The velocities of detonation of some of the better known explosives are given below in a table also taken from Colver.

Velocity in Feet per Second

Fulminate of mercury	7,380
Picric acid	15,583

TNT	13,451
Tetryl	23,480

It was once thought that the value of an explosive as a detonator was dependent on its wave speed. However, TNT has a much more rapid wave than has fulminate of mercury, but the latter is much the better detonator. This is explained by one theory as follows: Detonating ability is not dependent on wave speed but on wave breadth. In other words, fulminate is a good detonator because it has a broad wave which starts impulses sympathetic to the waves of all explosives with which it may come in contact, in much the same fashion as a radio transmitter with a broad wave can be heard by many stations though they are each tuned to different frequencies.

Another characteristic which affects the usefulness of an explosive especially with respect to its use in the service is its sensitivity. Obviously, the filler of a shell which is to be fired from a gun must be comparatively insensitive to shock. On the other hand, some explosives require such strong impulses to detonate them that they are valueless for practical use.

The following table shows the minimum fall in inches required to detonate the explosive shown:

Weight of falling body .	*3.5 oz.*	*18 oz.*
Mercury fulminate	3	
Nitroglycerin	3	
Potassium chlorate	7	
Guncotton (dry)	14	
Black powder		74
Picric acid (crystalline)		80
TNT (crystalline)		80

While this table cannot be considered as an absolute indication of sensitivity it gives a fairly accurate idea of the effect of a blow on these substances. Sensitivity to friction, heat, mechanical vibration, and detonating waves would require separate tables.

The sensitivity to detonation by fulminate of mercury is indicated by the following table of minimum quantity of fulminate required to detonate completely 1 gram of the explosive.

TNX	.40 gms.
Tetryl	.24 gms.
TNT	.26 gms.
Picric acid	.25 gms.

It may be of interest to know approximately what temperatures are produced by explosions. In propellants this factor affects the life of the rifling:

Nitroglycerin	6,260°F.
Guncotton	4,730 F.
Picric acid	4,400 F.
Black powder	5,000 F.
Fulminate	6,390 F.

Classified according to the use to which they are put, naval explosives may be divided into (*a*) initiators or detonators, (*b*) propagators or boosters, and (*c*) the working classes of bursting, propelling, and demolition charges. Initiators are invariably high explosives, boosters are usually in the high class, though black powder is an example of a lower explosive so used. The workers may be almost any class of explosive. Propellants are mainly low explosives, sometimes mixed with a high ingredient. A typical explosive train is illustrated by a modern large caliber rifle. Here a firing pin strikes the fulminate of mercury-potassium chlorate cap of the primer. This cap, the initiator, ignites the black powder in the metallic seal of the primer and in the red end of the powder bag. The black powder is the booster or propagator. From the booster the flame spreads to the main propelling charge of smokeless powder. In each case an impulse causes the disintegration of the next explosive of the train. A similar train exists in the torpedo war head where the sudden arresting of a torpedo actuates the firing pins of the exploder mechanism. These pins impinge on the fulminate caps of the detonator. The caps detonate the fulminate contained in the detonator capsule and this in turn detonates the 10-ounce can of tetryl, the booster. The explosion of the booster detonates the main charge of TNT.

An attempt has been made to make practical rather than scientific descriptions, so that they will be a guide to anyone called upon to use or handle these explosive substances. Remember, for example, fulminate is really a "bad actor." Never let anyone jar a torpedo detonator or drop it even the height of a few inches. On the other hand, though requiring reasonable care, TNT was unconditionally exempted in England in 1910 by an order in council from being deemed an explosive during manufacture and storage, or while being moved, provided it is properly packed.

Fulminate of mercury.—This is in the form of white, gray, or yellowish-gray sparkling metallic crystals. As used in the Navy,

the crystals must pass through a 200-mesh sieve. It may be purified by recrystallizing from ammonia to sparkling white large needle-like crystals. In this latter form it is unsuitable for explosive work as its sensitivity varies directly with the crystal size. Breaking the edge of one crystal may detonate the mass. When dry it readily detonates, both when confined or loose, by friction, blow, heating to about 360° F., contact with strong sulphuric or nitric acids, an electric spark, or explosion of any detonating compound. It may be compressed with care to above 10,000 lbs. per sq. in. It should be stowed, transported, and whenever possible, handled while wet. In this state, if fulminate is spread on a steel plate and struck with a hammer, only the portion receiving the blow will detonate. While wet, it will stand reasonable jars, shocks, etc., and can be readily detonated with a dry fulminate detonator. It is rather uncertain in action when wet and sometimes explodes contrary to habitual rules. It is used for torpedo detonators (about 65 grains), wrecking charges, detonators (35 grains), and in all percussion caps (except those used in torpedo igniters), either alone or with chlorate compounds. It is produced by pouring the product of strong nitric acid and metallic mercury into alcohol; it is much the most sensitive and violent of common explosives; is highly poisonous; and its products of explosion are poisonous too.

TNT.—Trinitrotoluol is produced in two grades. Grade B is dark brown or reddish showing a sugary crystalline surface (color is imparted by impurities) and was formerly used for loading war heads and depth charges, in a cast state. Grade A is made from the crude TNT by washing with alcohol, or recrystallization from benzene or alcohol and usually has the appearance of light yellow granulated sugar. It was used in the crystalline state as a war-head and depth-charge booster, and is now used in cast state as a filler for war heads, replacing grade B for this purpose. One of the principal uses of grade A is as a shell filler. It will not, except under extraordinary conditions, explode when burned in air unless in quantities so large that the enveloping flame acts as container (about 600 lbs.). It explodes when confined if heated rapidly to about 570° F., and requires a quite strong fulminate, chlorate, or tetryl detonator to initiate explosion. It has the property, especially when impure, of forming isometric compounds on storage, which have the appearance of brown syrup and can be detonated only with difficulty. It is made by the triple nitration of toluene, a coal tar product, and is one of the safest of explosives, though very powerful and efficient. When absorbed by the skin or lungs, it produces typical nitrogen explosive skin irritation or rash and causes digestive complaints and, in severe cases, jaundice and atrophy of the liver. As it forms dangerous compounds with alkalies, lye, soap, etc., must not be used to clean TNT kettles or similar articles.

Tetryl.—Tri-nitro-phenyl-methyl-nitramine, or tetra-nitro-methyl-aniline, has an appearance varying between that of flours of sulphur and granulated sugar of a slightly more orange cast. It is used for boosters in war heads and detonating fuses and in detonators, either alone or with fulminate of mercury, is perhaps the most powerful of the useful explosives, and is made by the action of sulphuric and nitric acid on mono- or dimethylaniline and subsequent recrystallization of the product from benzene. It has a flash point of 186° C. and will explode when heated above this temperature, even while unconfined, or under the blow of a 10-pound weight falling about 10 in. It is about as sensitive as picric acid, and is a very stable and comparatively safe explosive. As it is very poisonous when absorbed by the skin or lungs, workers unless protected suffer from skin rashes or sores and, when poisoning is severe, from kidney complications.

Nitroglycerin.—Though not used in the Navy, nitroglycerin is probably the most important explosive for accomplishing useful work. It is habitually used as dynamite, a common form of which is nitroglycerin absorbed by an infusorial earth called kieselguhr. This guhr is rolled into paper cartridges called sticks. There are many commercial forms and variations of dynamite called blasting gelatine, etc. An estimate of its sensitivity may be gained from the table given in the first part of this article. It is habitually detonated with a fulminate of mercury blasting cap. Simple nitroglycerin and dynamite will burn quietly if ignited but can be detonated by percussion. When handled nitroglycerin gives the well-known severe nitroglycerin headache and has a powerful effect on the heart.

Black powder.—This is a mechanical

mixture of potassium nitrate, or saltpeter, sulphur, and charcoal in varying proportions. A common combination is the proportion 6:1:1 of the ingredients in the order named. Black powder is extremely stable but is susceptible to dampness which renders it inactive in some cases. It is used in the Navy as a propagating charge for smokeless powder, in gun primers, torpedo igniters, and saluting charges. It is still used in some localities as a propellant for small arms. It is one of the most dangerous of all explosives, being sensitive to friction, percussion, flame, and detonation, but nonpoisonous.

Picric acid and its compounds.—Picric acid (canary yellow crystals, granulated sugar size) which is manufactured by the nitration of carbolic acid, is a very powerful, safe explosive. Among its most valuable properties are absolute chemical stability, absolute physical stability, non-hygroscopic property, practical impossibility of ignition in air, and insensitiveness to shock. Under compression it is even more safe than when not compressed. These properties make it valuable as a shell filler, and it and its compounds are so used by most countries. Some of the more important bursting compounds are known as melinite, schimose, lyddite, picramite, ekrasite, etc. Strong fulminate detonators are used to explode them. Workers in contact with picric acid, unless amply protected, are very liable to poisoning, and heart disease and disturbances of digestive organs may result.

No attempt has been made to summarize guncotton or smokeless powder because it is believed that the methods of manufacture and the general properties of nitrated cotton explosives are familiar to every officer. It is perhaps not universally realized that the degree of nitration of cotton greatly affects its properties as an explosive and for commercial purposes. Cotton for smokeless powder, guncotton, celluloid, and lacquer each has its own degree of nitration.

No absolute rules for explosives can be laid down; their properties are affected by pressure, temperature, dampness, etc., and great margin should be allowed for their peculiarities. In actual contact with most of them, their poisonous rather than their explosive effect is to be most feared. Treated properly they are our servants and their power far excels that of any others we may possess—human, animal, or mechanical.

★

THE MIND OF THE WARRIOR *is thrown into a conflict between the demands of his lifework and the siren voices of the eternal peace advocates. How can the enthusiastic belief in the preparedness for war and in the relentlessness of the fight prevail in a mind which is touched by the doubt whether war among civilized nations is not brutal and immoral and criminal? It is one of the most important conditions for the success of the navy that such inner wavering be absolutely excluded from the officer's mind. All that is needed is for him to see them in the right perspective. He will not deny the harm and the losses which war brings with it. But at the same time he will be deeply impressed by the tremendous moral power of a national self-defense which concentrates the energies of the whole nation in loyalty to its historical mission. He must grasp the fundamental rôle of war in the history of mankind as the great vehicle of progress, as the great eradicator of egotism, as the great educator to a spirit of sacrifice and duty.**—MUNSTERBERG

* *See filler on page 1663.*

TACTICAL HORSEPOWER OF SUBMARINES

By Lieutenant W. J. Holmes, U. S. Navy

THE term "tactical horsepower" is defined as the horsepower available for propulsion. On submarines with direct connected engines it is less than the rated horsepower, except for very short intervals when the bottom is clean. This arises from the two limitations which must be observed in Diesel-engine operation. The first is that the maximum designed piston speed must not be exceeded. The second is really a heat transfer limitation, but is invariably expressed as a limitation placed on the mean effective pressure. Both of these limitations are factors of design and cannot be altered with safety after the engine is built.

With the maximum allowed mean effective pressure fixed, an examination of the familiar horsepower formula shows why the horsepower falls off as the bottom fouls. If in the formula,

$$hp = \frac{Plan}{k \times 33{,}000}$$

maximum P is regarded as fixed by design, the available horsepower varies directly with n. Submarine propellers are usually so designed that, with a clean bottom in smooth water, maximum allowed mean effective pressure is developed in the cylinders at a speed corresponding to the maximum allowed piston speed. When the bottom fouls, to make the same r.p.m. would require greater than maximum mean effective pressure. A reduction must therefore be made in the maximum allowed revolutions which entails a corresponding reduction in available horsepower.

Figure 1 shows on the conventional diagram how the horsepower for various propeller speeds varies with time out of dock. On this diagram shaft horsepower is plotted against r.p.m., both to logarithmic coordinates. Such a diagram is in current use in submarines, but it should be remembered that two inaccurate assumptions have been made in order to simplify the diagram. The first assumption is that $s.h.p. = k(r.p.m.)^n$. This assumption is probably sufficiently correct for all practical purposes although n does not remain constant throughout the whole range. The second assumption is that n equals three, not only for the clean bottom but also for foul bottom condition. This assumption affects the accuracy of the conclusion more seriously because, as the bottom fouls, n probably has a lower value. The value of n for foul bottom conditions is a subject about which little is known. The resistance of a ship to passage through the water may be roughly divided into the frictional resistance and the wave-making resistance, the latter varying nearly as the fifth power of the speed. As the wave-making resistance is the less affected by fouling, it follows that fouling has a relatively greater effect at slower speeds. The slope of the s.hp.-r.p.m. curves for foul bottom conditions should therefore be less than three. Information on the subject is vague and incomplete. The Bureau of Fisheries pamphlet on the effect of fouling states that a badly fouled bottom may cause increase in power as much as 100 per cent at slow speeds and 60 per cent at high speeds.

The error introduced by making all s.hp.-r.p.m. curves parallel varies with the positions of the points for which data were taken to establish the curves. On this subject no data are at hand and, as the whole question is one on which little is known, the writer has persisted in making all curves parallel. As conclusions are drawn on comparative results, the error introduced will be slight.

All data are taken from a certain division of submarines operating continuously from the same port in tropical waters. Under these conditions fouling is undoubtedly greater than for similar vessels operating in colder water or over a wider geographical range. The writer's own experience indicates that the conditions shown are by no means extreme, and worse conditions of fouling are frequently encountered. Data on these particular submarines were selected because

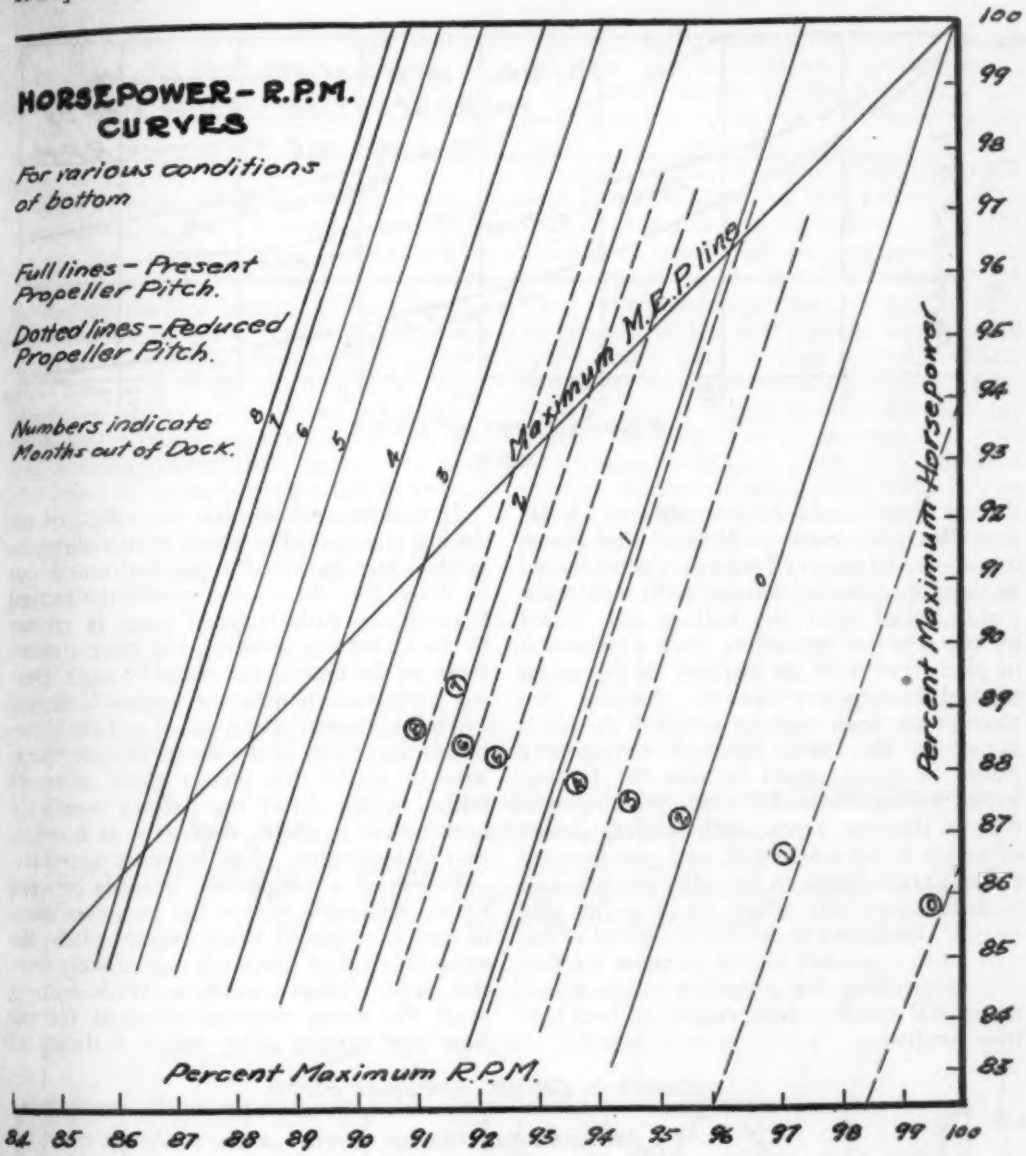


FIG. 1

they were the most complete and represented the accumulation of years of experience, tending to eliminate abnormal conditions.

In Fig. 1 the full lines marked with the plain figures are s.hp.-r.p.m. curves with propeller of present pitch. The figures represent the months out of dock. The dotted lines marked with encircled figures represent conditions that would obtain if the propeller pitch were reduced. All curves have a slope of three. The intersection of these curves with the line labeled maximum mean effective pressure determines the r.p.m. at which maximum allowed mean effective pressure will be developed in the cylinders. As the hp. with fixed mean effective pressure varies directly as r.p.m. the slope of mean effective pressure line is one. Data for all other curves are taken from Fig. 1, except that additional data on effect of fouling on the r.p.m.—speed relation were used for curves of Fig. 4.

In this discussion comparison is made between existing conditions and estimated con-

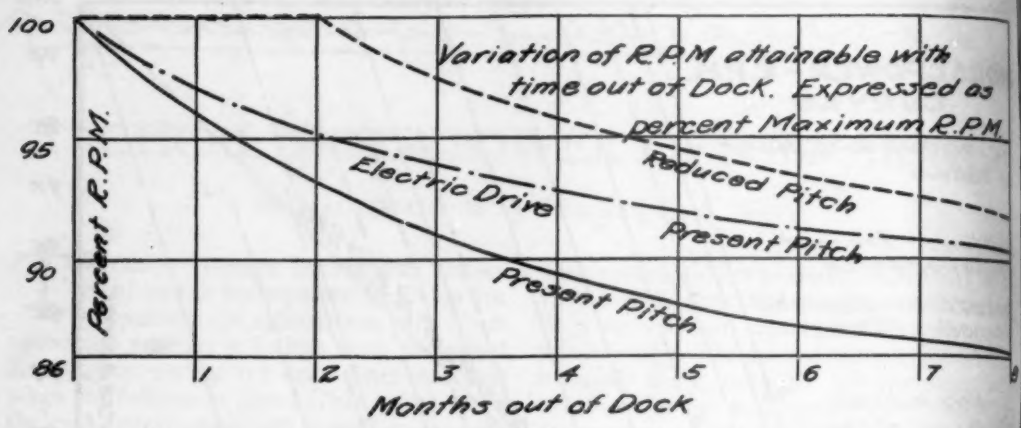


FIG. 2

ditions that would be encountered if the propeller pitch were so reduced that maximum allowed mean effective pressure would be developed in the cylinder with maximum piston speed after the bottom has fouled by two months' operation. Such a reduction in pitch results in an increase in the mean tactical horsepower between docking. No attempt has been made to establish the pitch at which the mean tactical horsepower would be a maximum because the fouling varies so much with different operating conditions that an exact mathematical determination is not warranted, and also because too radical a change in propeller pitch would probably adversely affect the propeller efficiency. Discussion is therefore limited to the two pitches selected mainly to show the falsity of pitching the propeller to get maximum trial speed without regard to foul bottom conditions.

It will be noticed that the effect of reducing the propeller pitch is to reduce the tactical horsepower for the first month out of dock. For the second month the tactical horsepower with reduced pitch is greater by an increasing amount, reaching a maximum at the end of the second month. During these two months the engine is limited by the maximum piston speed and the horsepower increases as the mean effective pressure to attain this piston speed increases with fouling. After the second month the horsepower available decreases as a reduction in maximum r.p.m. becomes necessary.

In Fig. 2, a comparison is made between r.p.m. attainable under the two conditions of propeller pitch. With present pitch, the attainable r.p.m. drops off immediately from the clean bottom condition. With reduced pitch the r.p.m. remains constant for the first two months after which it drops off

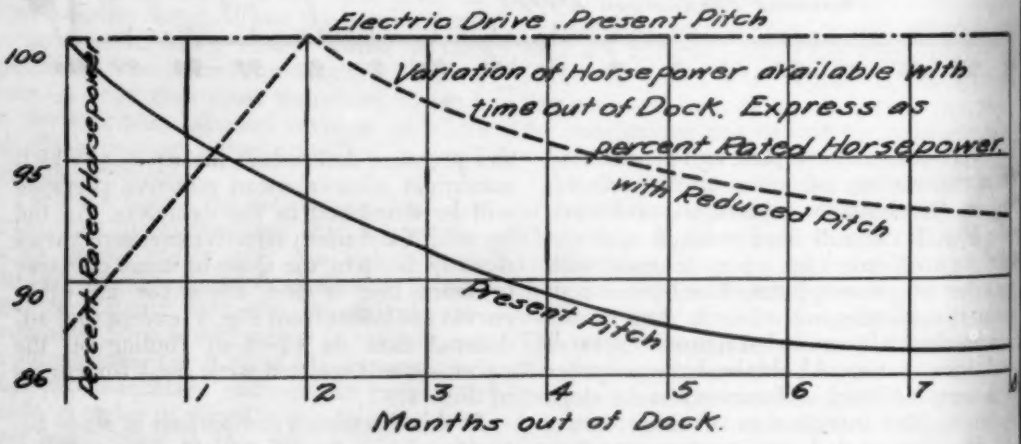


FIG. 3

at a somewhat slower rate than before.

In Fig. 3, the horsepowers available for propulsion under the two conditions are compared. Under present conditions the horsepower decreases at the same rate as the r.p.m. in Fig. 2.

With reduced pitch the tactical horsepower is less for the first month out of dock, the sacrifice varying between 13 per cent with clean bottom and 0 per cent shortly after the end of the first month. From this time on reduction of pitch results in increased available horsepower, the increase varying from zero to a maximum of 6.5 per cent. Inspection of these two curves immediately discloses that the mean ordinate of the second curve is greater than that of the first. The mean ordinates are determined as 90.6 for the first curve and 94.2 for the second, or a gain of 3.6 per cent in average horsepower for the time out of dock by reducing the pitch.

In Fig. 4, the speeds through the water for these two combinations are compared. The striking feature of these curves is the serious loss of speed due to bottom fouling under any and all conditions. Corresponding to the available power a slight gain in speed after the first month out of dock is obtained at the sacrifice of a slight amount of speed for the first month. The loss of speed for the first month varies from 5 per cent immediately out of dock to zero at the end of the first month. The gain in speed varies from zero at end of the first month to a maximum of 2.5 per cent at the end of the eighth month. Average ordinates of these two curves are 81.1 and 82.1 respectively or a gain of 1 per cent average maximum speed for a reduction in pitch. Corresponding greater average advantage would be obtained when longer periods between dockings are necessary.

These curves for speed were determined

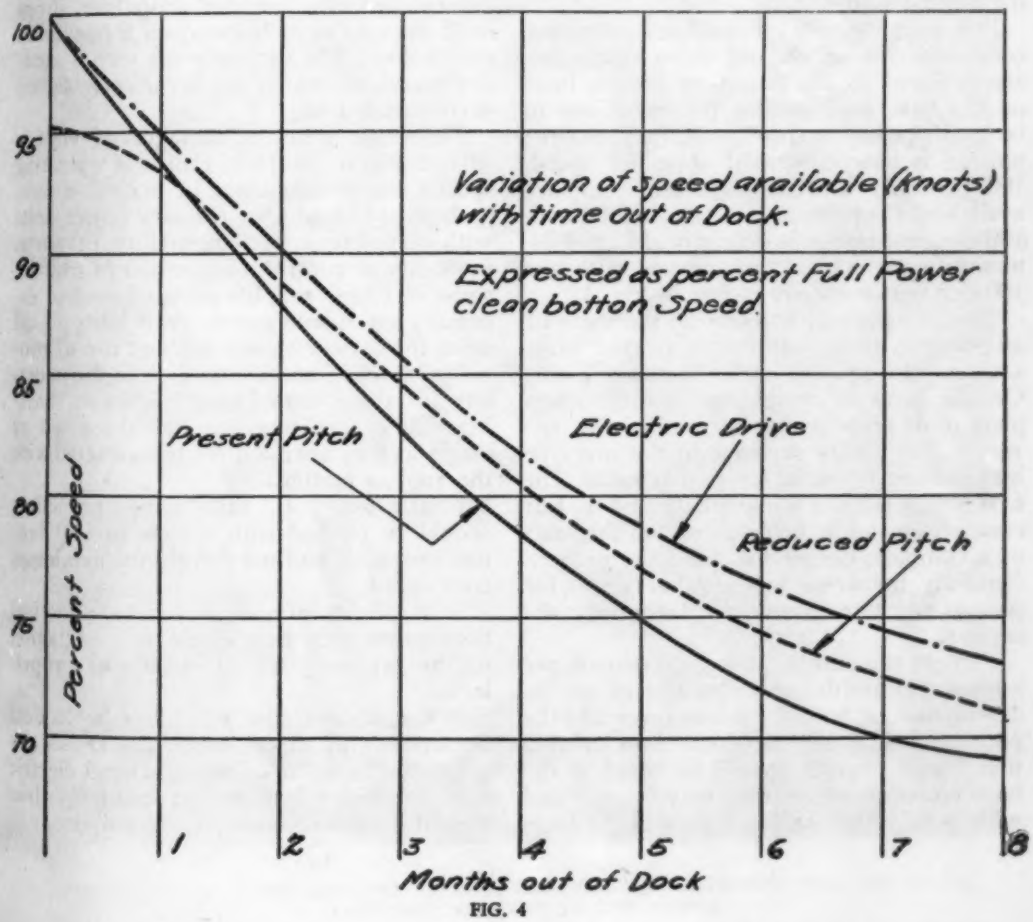


FIG. 4

by data available for variation of per cent clean bottom speed obtained at various r.p.m. at different times out of dock. These curves (not submitted) also show that fouling is more serious at slow speeds as the percentage reduction of clean bottom speed due to fouling is greater at slow speeds than at high speeds. The curves were drawn on the basis that the propeller efficiency would not be seriously affected by reducing the pitch the necessary amount to effect the change desired.

No attempt has been made to evaluate the effect of sea conditions. With adverse wind and sea the available horsepower will be decreased under all conditions with present propeller pitch and after the second month with reduced pitch. For the first two months with reduced pitch adverse wind and sea would increase the total horsepower available, although, of course, the speed through the water would be reduced from the plotted values.

For purposes of comparison, estimated conditions for an electric drive submarine are depicted on the curves in broken lines on the basis that present propellers are to be used. As engine speed with this type propulsion is independent of propeller speed, 100 per cent rated horsepower is always available. Propeller r.p.m. attainable with 100 per cent power is determined by the intersection of s.hp.-r.p.m. curves with the 100 per cent horsepower line in Fig. 1.

This comparison is made on the basis of an electric drive installation of the same s.hp. as the present direct connected one. On the basis of weight per s.hp. such a plant could probably not be installed. No correction for weight per s.hp. of the two type installations is made for two reasons. The first is that no data are available and no fair comparison can be made except on the basis of a complete design for a definite project. Secondly, the writer believes that figures for pounds per horsepower are frequently deceptive.

Figures sometimes quoted for pounds per horsepower are deceptive because of the indefiniteness of both the horsepower and the pounds. The writer is of the firm opinion that Diesel engines should be rated at the horsepower at which they may be operated with reliability. On this basis he believes that many of our submarine engines would have to be re-rated. Also, it is unfair to quote figures for pounds per horsepower on a basis of 100 per cent rating when the engine can develop that rating only for short periods when the bottom is clean.

In comparing weights, the only just comparison is for the weight of the complete plant. Thus, the elimination of engine clutches, propeller clutches, synchronizing clutches, extra shafting, and engine reversing gear would go a long way toward compensation for generator weights, and extra weight of motor and control gear. If high speed engines are used the writer believes that a Diesel-electric drive plant could be designed which would compare well with the best design of direct drive plant.

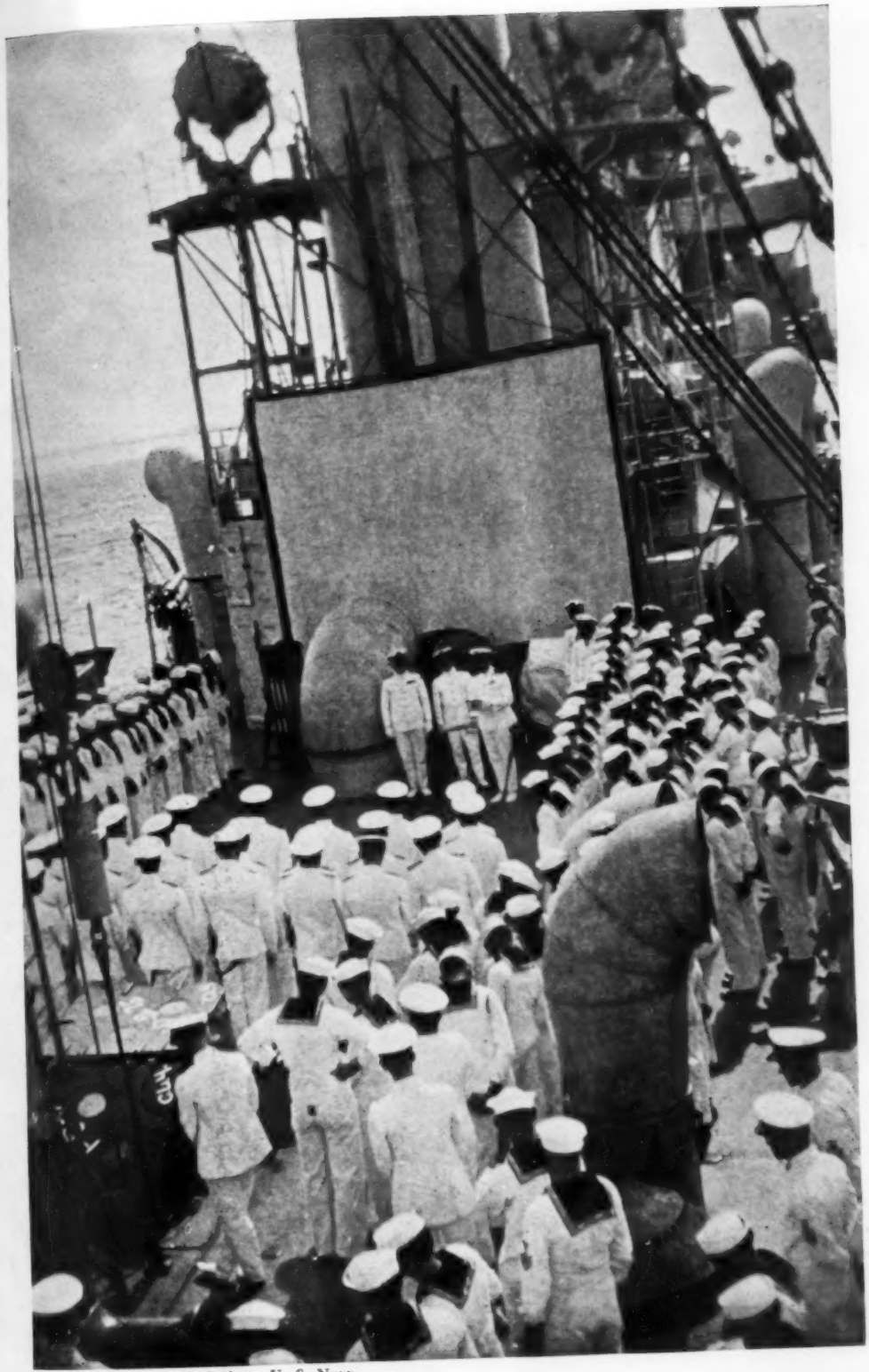
In this discussion the subject of critical speeds has been avoided. Where critical speed range exists close to the maximum piston speed it frequently occurs that the horsepower available for propulsion drops to 85 per cent rated horsepower a few weeks out of dock. The necessity for such a sacrifice would, of course, not occur in an electric drive installation.

There are other advantages of electric drive such as complete range of operating speeds due to avoidance of critical speeds, multiplicity of smaller primary power units with complete interchangeability of parts, flexibility of control, elimination of troublesome clutches, simplification of control especially on submergence, availability of all units for battery charge without use of propeller clutches, and elimination of the necessity for alignment of long lengths of shafting. These subjects are not discussed at length as they are not directly connected with the subject matter.

Conclusions: 1. Submarine propellers should be pitched with a view to foul bottom operation and not merely for maximum trial speed.

2. A slight increase in average tactical horsepower may be secured by a reduction of the present pitch of submarine propellers.

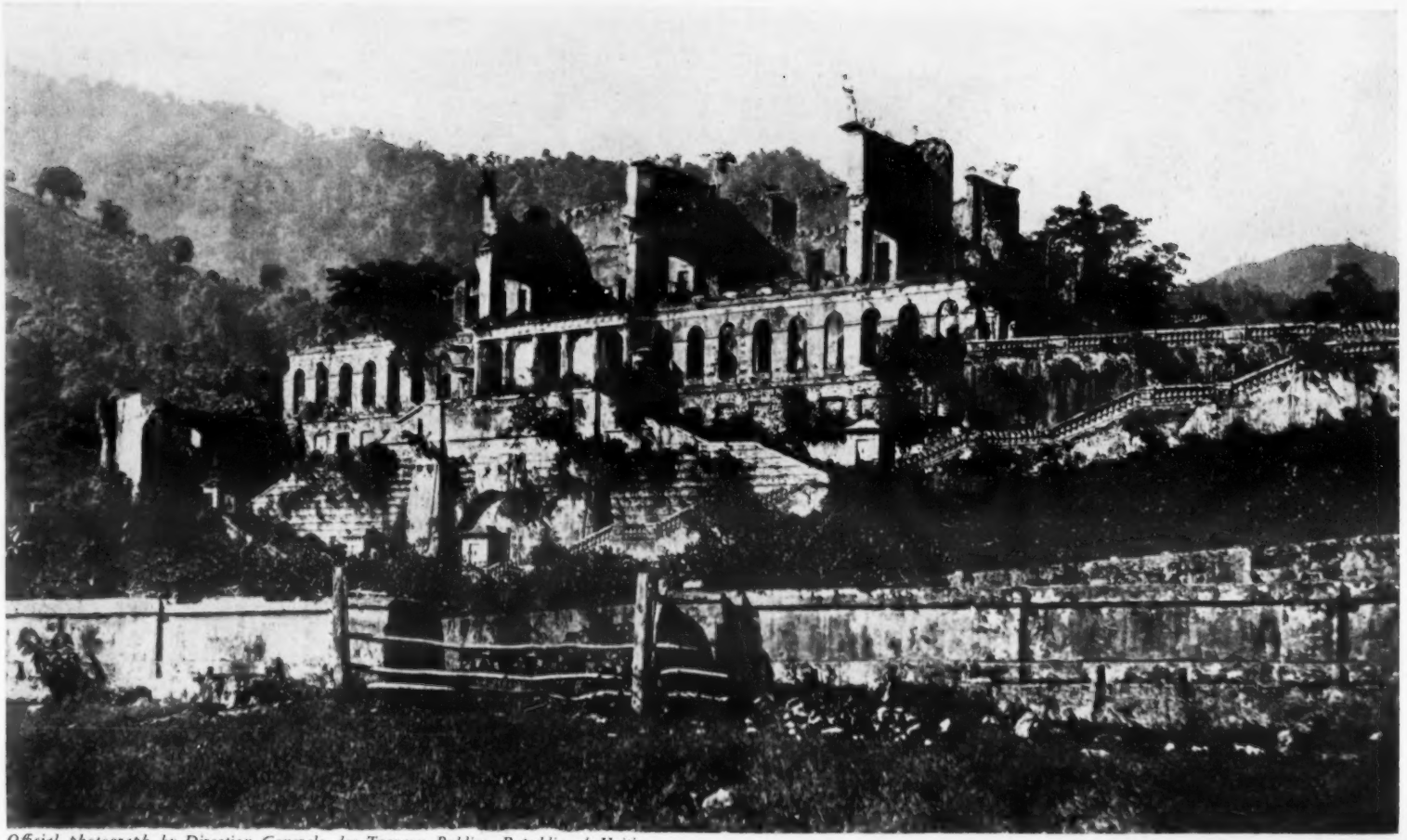
3. Considering the reduction in tactical horsepower of direct connected Diesel engines due to bottom fouling, Diesel electric drive is under less weight handicap than weight per horsepower figures indicate.



Courtesy Captain A. C. Pickens, U. S. Navy

PRESENTATION OF THE GUNNERY TROPHY, THE ENGINEERING TROPHY, AND THE BATTLE EFFICIENCY PENNANT TO THE *OMAHA*

The *Omaha* went into commission March, 1923. Since then she has won the battle efficiency pennant four times, the gunnery trophy five times, and the engineering trophy twice. She has had two red E's in engineering and one in gunnery.



Official photograph by Direction Generale des Travaux Publics, Republic of Haiti

SAN SOUCI PALACE AT MILO, HAITI

This palace was built by King Christophe who ruled the northern part of the island after the ejection of the French. Tradition has it that he used to have those of his subjects who refused to work their fields chained to a large iron ring under a tree in the courtyard. He would take his seat under the tree and have first offenders fined. Second offenders were put to death.

Official photograph by Direction Generale des Travaux Publics, Republic of Haiti

SAN SOUCI PALACE AT MILO, HAITI

This palace was built by King Christophe who ruled the northern part of the island after the ejection of the French. Tradition has it that he used to have those of his subjects who refused to work their fields chained to a large iron ring under a tree in the courtyard. He would take his seat under the tree and have first offenders flogged. Second offenders were put to death.

Official Photograph by D.G.T.P., Republic of Haiti

THE OLD AND NEW CATHEDRALS AT PORT-AU-PRINCE, HAITI

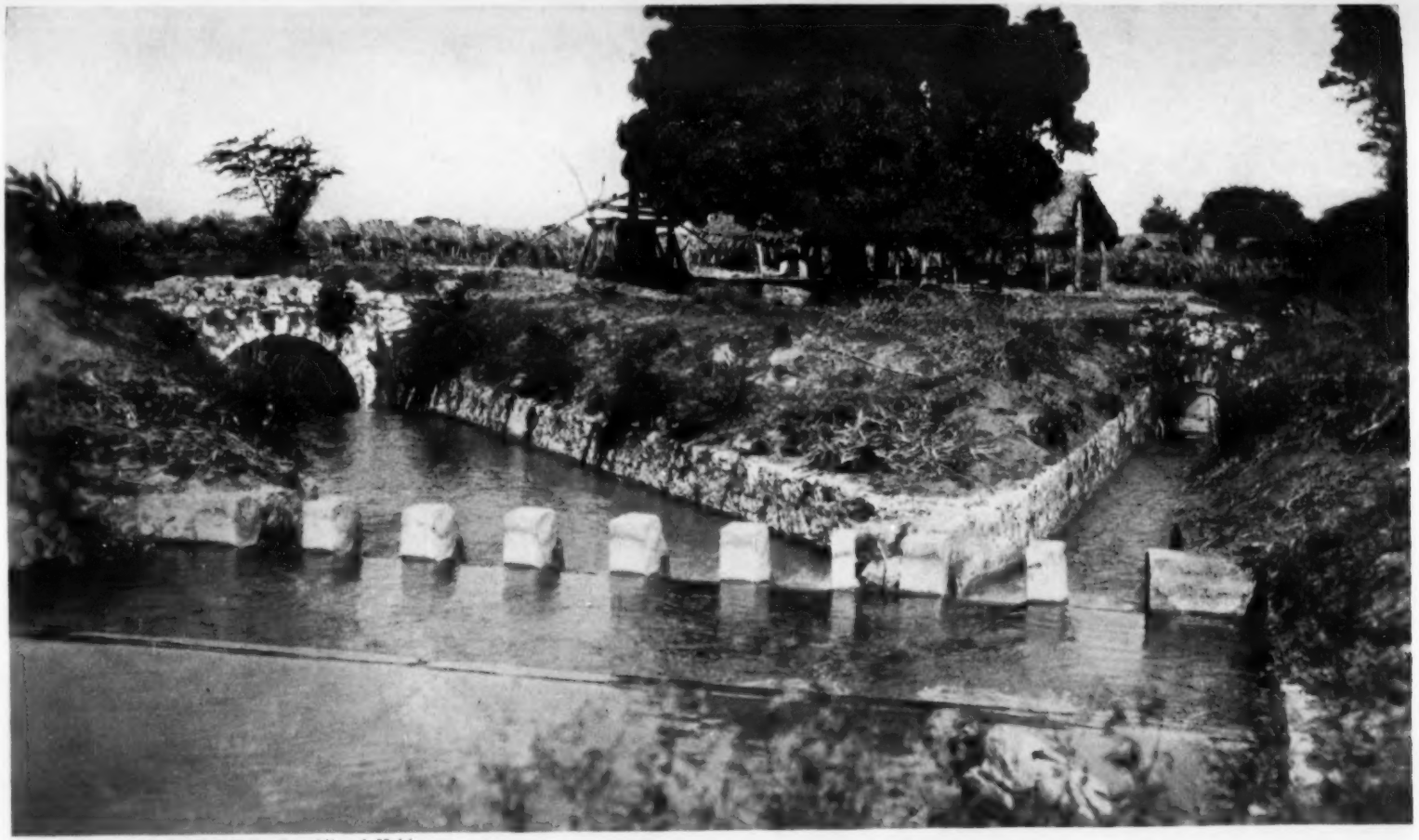
The Haitian market is in the foreground.

Official Photograph by D.G.T.P., Republic of Haiti

WHERE CIVILIZATION HAS IMPROVED CONDITIONS
The modern road between Port-au-Prince and Cayes, Haiti.

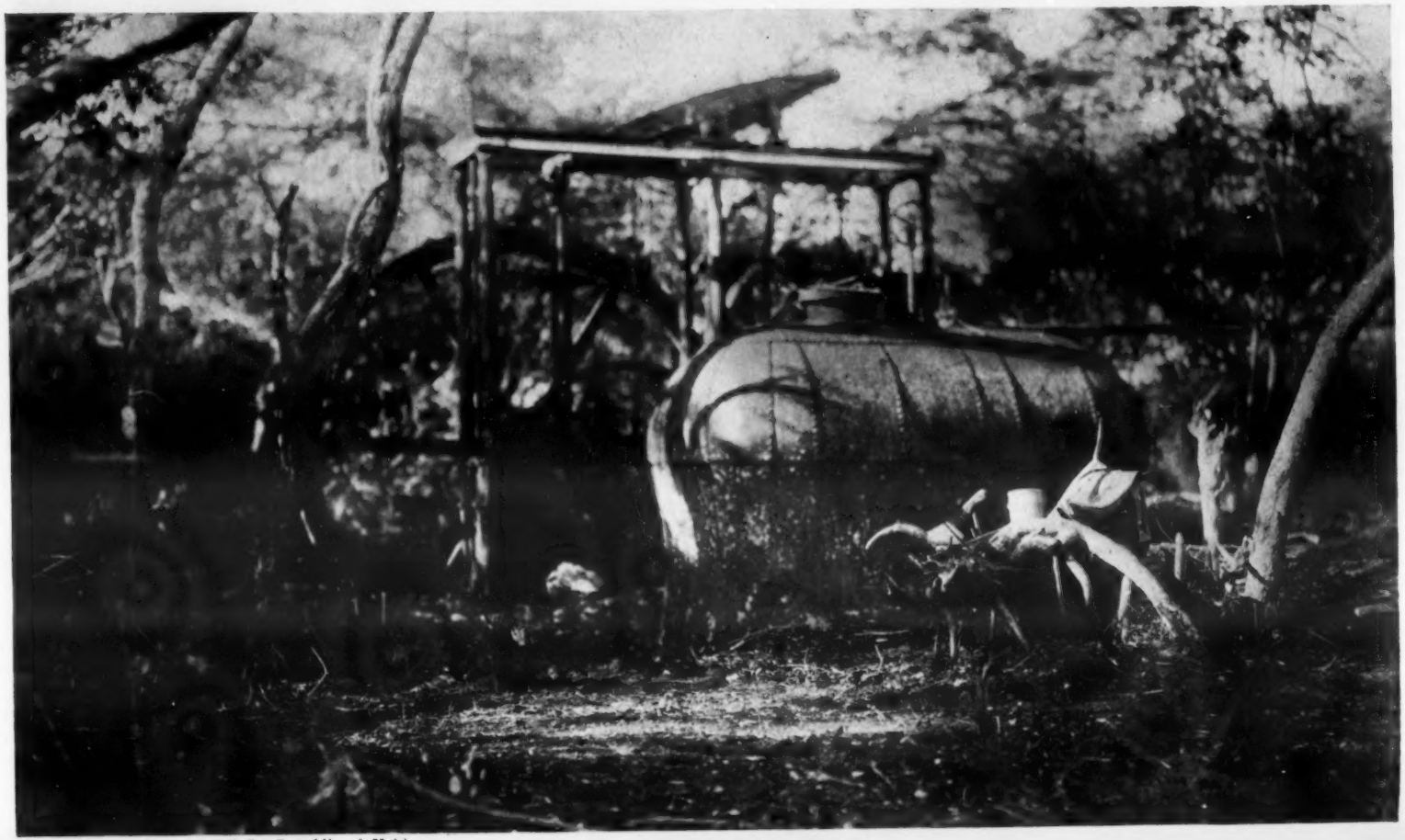
Official Photograph by D.G.T.P., Republic of Haiti

WHERE CIVILIZATION HAS IMPROVED CONDITIONS
The modern road between Port-au-Prince and Cayes, Haiti.



Official Photograph by D.G.T.P., Republic of Haiti

PART OF AN IRRIGATION SYSTEM CONSTRUCTED BY THE FRENCH IN COLONIAL DAYS
It is still in use on the Rivière Grise irrigation system, in plain of the Cul-de-Sac, Haiti.



Official Photograph by D.G.T.P., Republic of Haiti

A REMNANT OF FORMER INDUSTRY

A boiler and engine near Jacmel, Haiti, built by Haigh Iron Works, near Liverpool, in 1818.

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A boiler and engine near Jacmel, Haiti, built by Haigh Iron Works, near Liverpool, in 1818.

Official Photograph by D.G.T.P., Republic of Haiti

HAITIAN MARKET AT CROIX-DES-BOUQUETS

Official Photograph by D.G.T.P., Republic of Haiti

A NEW DRESS MATERIAL
One of the results of the American occupation of Haiti.

THE OCCUPATION OF A HAITIAN TOWN

By Colonel Frederic May Wise, U. S. Marine Corps (Retired)

OCCUPATION of foreign towns and control of the civilian population frequently cause difficult situations where any failure of discipline by one man of the command may start a row. Lack of tact, unnecessary show of force, arbitrary action may cause resentment resulting in sniping by the civilian population and retaliation by the forces of occupation. Luck, proper attention to the wants and feelings of the civilians, and restraint, together with coöperation on the part of local authorities, may so affect conditions that loss of life and destruction are reduced to a minimum.

In 1915, a few days after our first arrival in Port au Prince, it was decided that we should take over the finances of the Republic of Haiti. To accomplish this, the larger seaport towns were to be garrisoned, in order to handle the customs which were at that time the only source of national revenue.

Two weeks later, with two officers, one naval hospital apprentice, and 100 men, we embarked in the late afternoon on the gunboat *Marietta*, commanded by Captain Pitt Scott, U. S. Navy. The orders were:

Occupy the Town of Jeremie, in Southern Haiti.
Disarm all Haitian soldiers found there.
Take control of the customs.
Continue the existing civilian government.

These orders had been elaborated by the information that somewhere in those parts was a *chef d'arrondisement*, who officially ran that section of the island, and that in the town of Jeremie there was a United States consular agent. Both were natives.

I had already figured out that these Haitians had had a devil of a time. They had had years of revolutions, to be climaxed now by the arrival of foreign troops whose language they did not understand. The wildest rumors were being circulated as to our intentions. Every condition existed for misunderstanding our occupation of their country. They were a proud, sensitive outfit, exceedingly emotional—God knew that up to date there had been plenty to develop their emotions. In my day I had trained many a frightened hunting dog, two or three of whom had been badly abused before I got hold of them. Somehow, these people struck me in this same light—they now trusted no one. Proud, sensitive, with the finest blood of France mixed with that of their African slave ancestors, they were terrified and dumbly on the defensive.

Late the following morning we came to anchor in an open roadstead off the town of Jeremie. Cultivated country ran up to the foothills. It was a typical French colonial settlement. Old buildings two or three stories high crowded around the water front and barricaded the narrow streets which gradually rose toward the mountains, giving the town the appearance of looking down on you. The outskirts simmered down to all sorts of nondescript shacks huddled together—a hell of a place to land men, if there were to be any resistance.

It seemed wiser for Captain Scott and me to go ashore first without the men. We decided to go unarmed, without even a ceremonial sword, so that there could be no misinterpretation on the part of any native of Jeremie. There was neither sound nor movement in that large crowd which had gathered on the wharf as we stepped ashore. In a second, I had picked out of that sullen mass of ragged, half-clothed Haitians, a number of soldiers carrying new rifles, and three or four well-dressed civilians. All were wide-eyed, curious, and silent. In our broken French, we asked for the residence of the United States consular agent. Instantly one of the better-dressed men stepped forward. He informed us, in excellent English, that it would be his pleasure to be our guide. We followed him. Some of the crowd silently trailed after us. Now and then we passed native soldiers, each of whom had one of those new rifles.

On arrival at the consulate, we found the agent, a fine-appearing mulatto. At once he

told us in English that he was a proud graduate of Fordham University, New York; and that he was delighted to assist the Americans. He took us at once to call on the "Chef," whom we found in his store. This one did not speak English. The consul informed him of my orders. Without a second's hesitation he promised his coöperation, and with a sparkle in his eye, said that personally he would be enchanted to see the last of those Haitian soldiers in Jeremie. With much satisfaction he explained to us that they were from Port au Prince and a set of thieves.

With the assistance of the two new allies a large warehouse was rented on the water front. Our men were brought ashore and installed there as quietly as possible. By this time it was dark. The streets were filled with natives forming into animated groups. It was absolutely necessary to know at once their reaction to our arrival. Private Connaughton, a French Canadian, was sent, unarmed, to mingle with them and to find out what they were talking about. After a couple of hours he reported that he could find no unpleasant aspect from the landing of the marines and that there was much speculation as to what our next move would be. No matter what we did, nothing could be worse than their old régime.

When the consul arrived early the next morning the taking of those guns was already on the carpet. At the least hint of any designs on those rifles they would become, in a flash, old muskets. It was a time, if any rabbits were coming out of the hat, no Haitian must be waving the wand. All tricks must be played by us or those new rifles would disappear like magic. The consul brought the captain of that company of Haitian soldiers to call on me. Compliments were exchanged until he, glowing with pride, invited me to inspect his men. He departed to assemble his hundred men. Taking my lieutenant and eight men, the consul and I joined him. The lieutenant and the men were armed.

Although the uniforms of the Haitian soldiers were in bad shape, and most of them were barefooted, they were a well-disciplined outfit. To our relief, each was equipped with his new rifle. After they had executed several maneuvers, I had their captain give the order to "stack arms." They obeyed this order with the same precision as they had the others. At once Lieutenant Coyle and our men took charge of those guns. The Haitian captain was dumbfounded. The consul explained to him that my orders were to disarm all native soldiers in Jeremie and that monsieur the American captain had accomplished this feat with the least possible trouble to both the Haitians and marines. That Haitian officer was too flabbergasted to think, so I ordered him to take his men into the barracks. We saluted and he obeyed.

We returned to the warehouse and the consul brought the collector of customs to me. He, too, was a native and spoke no English. We told him that the United States of America was taking charge of everything in Haiti, including the customs. He promptly and with much spirit resigned then and there, not only for himself, but for his staff. This was upsetting, but I accepted the resignations and wished him good morning. In three days, through the influence of the consul, we got our hands on a Haitian who had once been collector of customs. He procured his own staff. This arrangement worked without a hitch.

Not a shot had been fired.

The town of Jeremie was occupied by the marines.

The Haitian soldiers were disarmed.

The customs were under our control.

The civil government continued.

I never saw a town as hard up as Jeremie. For months the price of logwood had been down. A few weeks before our arrival a hurricane had razed the coffee and cocoa plantations. As these were the only enterprises, except the shops, no one had any cash and all business was at an absolute deadlock. There were some half-naked natives, incredibly poor, in the surrounding jungle, who existed by the same methods as their ancestors had used in Africa a century before; there were some conventionally dressed natives, pitifully destitute, in town, with a remarkable knowledge and appreciation of literature and music, speaking three languages fluently, who had obtained degrees from famous foreign universities. Whether the Haitian lived with a group of wives in a shack and spoke an unwritten patois, or lived with one wife in a villa and spoke the French of the academy, he had the same dominant racial characteristics.

The first afternoon we had seen in the

chef's store a glass show case directly in front of the door. Placed on folds of white satin was one black silk hat. It was his own headpiece, and not for sale. The natives from the country always came in to gaze at it. This high hat gave him an astonishing amount of prestige. The merchant paying the lowest rate for logwood got all the sales. In his shop, apparently hidden but easily accessible, was a large box of smoked herring. To the Haitian, the excitement of thinking he was stealing one of those fish made up what he lost in money by dealing with this particular man. When the mayor brought me an official document, he had a small boy precede him a few paces, with the paper weighted down on his bare head with a stone. The native chemist personally delivered his bottles of medicines by the same system. No Haitian of the educated class may work with his hands. This is known as caste.

In auditing the mayor's books it was found that the force of six native police, instead of being in rags, should have been uniformed like major generals. There were many similar entries in those books that showed that the mayor also enjoyed taking his herring out of the box. The mayor and his six policemen were permitted to run the town. There were no marine patrols, only a guard of sixteen men on duty at the customhouse. It was there I established an office, and there every morning I received any Haitians who came. All sorts and kinds of grievances were poured out. With the help of the consul, the chef, and the mayor, adjustments were rapidly made. Along with the others came those disarmed soldiers asking for work. I sent them to the chef, who advised a quick return to their friends in the capital.

Plenty of money was now available for municipal purposes, from our headquarters in Port au Prince. A daily allowance was created for feeding each prisoner. Streets and public buildings were cleaned up. The price of logwood, used in America and Europe for dyes, began to rise. Logwood went out of Jeremie—money came in—crops were planted—business was improving daily. We were all beginning to settle down.

The time had now come to take my men and officers out of that hot warehouse and make them comfortable. An estate was rented on the outskirts of the town, with the house serving for me and my two officers, and the garden in front making an ideal place to put the men under canvas. After rigging up a field telephone across the town from the customhouse to our new camp, the change was made.

A few weeks had passed, when headquarters sent Paymaster Philbrick, U. S. Navy, to take over the supervision of the customs. I invited him to live with me, and at once he caught my spirit in regard to handling the natives. Jeremie was now completely settled down to the quite wholesome life of a busy small town, lightly garrisoned. Then stories began to drift in to all of us that the American occupation in the north was meeting with resistance.

Before my men had disembarked from the gunboat *Marietta,* I had issued the order that no marine was to appear in the town armed. I immediately made this order more drastic. At once I made the discipline of my officers and men more taut. I kept my French Canadian on the streets—night and day I had my ear to the ground. Hourly I gave another twist to that invisible leash, which always exists between the commanding officer and his outfit.

As had been their custom from the beginning, my men continued to trail off every afternoon for a swim in a large stream which ran down to the sea on the other side of the town. They were on liberty, with neither officer nor sergeant in charge.

One afternoon a marine returned on the run with the word that one of them had drowned. Lieutenant Coyle, being on duty, rushed across the town on his pony. When he reached the stream, a crowd of ragged natives had collected (as they do by magic in Haiti wherever there is excitement). Lieutenant Coyle pushed his way through them to his own men. The man had been pulled out of the water and several of the men were trying to resuscitate him. The natives kept closing in around them, in their efforts to see what was going on. Lieutenant Coyle ordered them out of the way. They all fell back, except one huge, half-naked ruffian, who crazed with excitement was arguing, gesticulating, and beckoning the others to come up again. Lieutenant Coyle swung on him, hitting him squarely on the jaws, and knocked him flat. The crowd of Haitians, backing still farther away, howled with delight at this unexpected en-

tertainment. As the marine was unquestionably dead, Lieutenant Coyle had his body placed on a mule cart which one of the natives offered. When the driver, its owner, had started for our camp, with the marines straggling behind in groups, Lieutenant Coyle galloped ahead.

On reaching the camp, Coyle immediately reported the situation to me, explaining his necessity of silencing that howling Haitian before he succeeded in inciting the others to the same state of frenzy. Coyle had only finished when the telephone orderly brought me a message from the sergeant of the customhouse guard reporting that Sergeant Thompson, a member of the swimming party, had been killed by a native. The body was on the way to camp. Everything was quiet in the town. In spite of all my precautions hell was beginning to pop.

A cart, accompanied only by its native driver, arrived with the body of the drowned marine. Five minutes later, the swimming party returned bringing in Thompson's body with the head practically severed.

One of the men reported that after Lieutenant Coyle had ridden off, he and Thompson were walking a short distance behind the cart, which carried their drowned companion. The other marines were stringing out some distance behind them. When they entered the town, the streets were crowded with curious natives who already knew (in some mysterious fashion which exists in Haiti) that something out of the ordinary had taken place. Suddenly the man whom Coyle had knocked down, jumped out of the crowd, and practically cut Thompson's head off with one blow of a cane knife; jumped back into the crowd and disappeared. The other marines rushed up on the jump. Sergeant Neilson detached himself from them, instantly taking command.

"Halt!" he ordered. Those marines stopped in their tracks.

"Silence! Private Jones double time to the customhouse, tell the sergeant I want his guard."

Jones was off.

"Form a screen around Thompson's body. Silence!" Sergeant Neilson commanded.

In three minutes the guard arrived on the double.

Their sergeant took command, requisitioned a cart with a native driver from the crowd, had Thompson's body placed on it, ordered the swimming party to proceed at once to the camp, and detailed two of his own men to accompany them.

The crowd was continually increasing. They were too busy watching to talk.

When the swimming party was well out of sight, the sergeant quietly marched his guard back to the customhouse, two blocks away.

By the quick action of Sergeant Neilson, a magnificent specimen of a man, nothing had happened to any Haitian. Only a few had even had the chance to look at Thompson's mutilated body. With the departure of the guard, there was nothing for them to see or do. Shrugging their shoulders, they slipped away to their own affairs.

The consul came to see me at once with the facts. This man who had killed Thompson was a notorious roustabout, vicious to a degree, a bully who had a small following, like all bullies. When Lieutenant Coyle knocked him down, and his friends laughed at him, he saw red. As soon as he could get to his feet, he had rushed off for his gun, and tried to shoot Coyle from the bushes. His cartridges would not explode. Wild with rage, he discarded his gun for his knife. Again he tore through the bushes to get Coyle. When he was too late to catch up with him, he attacked the first marine he could reach. He saw himself again reinstated; appearing in a far better light, having killed a man, than lying half senseless on the ground. The consul also told me it would be impossible at this time to catch this man, as he had already taken to the jungle.

The next morning all the leading Haitians called on me to express their regrets over what had happened and to urge me to realize that it was the act of one vicious man and not the act of the community, and to beseech me to act accordingly. They were deeply appreciative and grateful in their praise of our men. We had already decided the night before that a community should not be punished for the act of an individual.

It would have taken but one wrong move on our part to have made a wildly excited mob out of a quiet, curious crowd. We were exceedingly proud of the discipline that existed in our command.

THE FISHER-BERESFORD CONTROVERSY

By H. A. De Weerd, Denison University

From family to empire no association of human beings can dispense with discipline.—Sir Ian Hamilton.

THE controversy between Lord John Fisher and Lord Charles Beresford occupies an important place in the recent history of the British Navy. It involved some of the most notable personalities in the service and exerted a profound effect on discipline. In some of its ramifications and certainly in its consequences the incident is of interest to all the navies in the world. Lessons which bear upon the problems of discipline or upon the relation of superior and subordinate are of universal application.

The facts concerning the remarkable career of Lord John Fisher of Kilverstone are familiar to many American readers. With a relentless, remorseless stride he had advanced in the service until he became first sea lord in 1904. His contemptuous disregard for "sycophants and jellyfish," his headlong manner, his tendency for exaggeration, his breath-taking program of reform, disturbed the more conservative sea officers, and gave the opponents of Fisher abundant opportunity for attacking him. As Winston Churchill said:

> He (Fisher) gave the Navy the kind of shock which the British Army received at the time of the South African War. After a long period of serene and unchallenged complacency, the mutter of distant thunder could be heard. It was Fisher who hoisted the storm signal and beat all hands to quarters. He forced every department of the naval service to review its position and question its own existence. He shook them and beat them and cajoled them out of slumber into intense activity. But the Navy was not a pleasant place while this was going on.

Fisher's sea lords during the first four years of his tenure were not strong enough to give him the support needed, and he became hardened by constant struggles against obstacles. Although he was probably "right in nine-tenths of what he fought for," the inertia of the service led Fisher to employ violent methods and still more violent expressions. Since it was manifestly impossible to ignore him, there came a time when a great many of the officers in the service could be classified as pro- or anti-Fisher.

The opposition to Lord Fisher, however, did not find a leader until Admiral Lord Charles Beresford became its spokesman. Charles William De La Poer Beresford was a charming Irishman with all the wit and pugnacity of that race. He entered the *Britannia* in 1859 and rose to the command of H.M.S. *Thunderer* in 1877. At the bombardment of Alexandria he distinguished himself by engaging Fort Marabout with his small ship, winning the signal "Well done *Condor*." He was an extremely popular officer and was held in esteem by his men for his ready hospitality and open-handed manner. He served as fourth sea lord in 1886-88, and as Member of Parliament from East Marylebone, York, and Woolwich. In 1903 he left political life in order to join the fleet in the Mediterranean as second in command under Admiral Sir John Fisher. Beresford had an unhappy faculty for getting into the newspapers, and his entrance into the Mediterranean Fleet was unfortunately made with a journalistic flourish which declared that he was going to teach the fleet some tactics. Naturally, when he undertook to act on this proposal, Admiral Fisher quietly told him what was expected of a second in command.

Sir Reginald Bacon's recent *Life of Lord Fisher* leads the reader to feel that the Fisher-Beresford controversy would not have taken its violent and destructive course had not Beresford coveted Fisher's position. There were, of course, differences of opinion such as their divergent views on the value of the *Dreadnought;* but these were not serious. The year 1905 found Fisher appointed to be an additional admiral of the fleet and this assured him four or five more years at the Admiralty. It seemed that his prolonged tenure might effectively bar

Beresford from office and the latter honestly felt that "he would make a better first sea lord than Fisher." Beresford came into possession of a considerable fortune when his brother died; this enabled him to entertain freely and made him at once a formidable opponent of Lord Fisher.

The opening guns of the controversy were sounded in 1907 when Sir Arthur Wilson retired from command of the Channel Fleet. Lord Charles Beresford had frequently been mentioned as a possible successor to Sir Arthur Wilson and had demonstrated a lively interest in the dispositions of the Channel and Home Fleets. Knowing something of Lord Beresford's habits, Fisher was careful before making the appointment to secure Beresford's approval of the dispositions of the fleet. This approval was made in writing on January 20, 1907. Beresford's interest was a legitimate one since the Home Fleet would automatically be placed under his command in time of war. His attitude, as described by Fisher in a letter to Mr. George Lambert, seems to have been somewhat haughty:

> I had three hours with Beresford yesterday, and all is settled, and the Admiralty don't give in one inch to his demands, but I had as a preliminary to agree to three things: Lord Charles Beresford is a greater man than Nelson; no one knows anything about naval war except Lord Charles Beresford; the Admiralty haven't done a single damned thing right!

A short time after this meeting Lord Charles felt inclined to assure Fisher of his cordial agreement with the Admiralty. He wrote in part:

> There is not the slightest chance of any friction between you and me; or between me and anyone else. When friction begins, I am off. If a senior and a junior have a row, the junior is wrong under any conceivable conditions, or discipline could not go on.

This handsome promise was unfortunately not to be fulfilled. Friction soon developed between the Admiralty and the new commander in chief of the Channel Fleet. It arose when Beresford requested that the Admiralty send him war plans. Now it was the traditional policy of the Admiralty to provide war orders not war plans. War orders contained general principles upon which the executive officer was to act in event of hostilities, and the commander in chief concerned was expected to draw up his own war plans. When Beresford requested war plans, the Admiralty naturally declined to forward them. They went as far, however, as to ask Sir Arthur Wilson to draw up some plans for Beresford; but he replied by saying that any plan drawn up in advance of hostilities would probably be worthless.

Beresford later used this incident in his campaign against Fisher by declaring that, when he took over the command of the Channel Fleet, there were no war plans and that the Admiralty had never prepared any. This sort of declaration did not impress those who knew the real state of affairs, but it made a strong appeal to the uninformed.

In spite of the fact that he had agreed to the arrangements of the Home and Channel Fleets in writing, Lord Charles soon felt obliged to raise the question of their constitution and disposition. He made the alarming charge that with the Channel Fleet as it was constituted, a sudden attack by the German fleet would have a good prospect of inflicting a crushing reverse upon England. He followed up this charge by a letter to the first lord of the Admiralty in which he described the Home Fleet as a "fraud and a danger to the state." In the face of this serious charge against Admiralty policy and against a fleet under the executive control of another officer, the Board of Admiralty acted with somewhat unwise restraint. Instead of asking Beresford to haul down his flag, they attempted to satisfy the wishes of this popular officer. At a meeting in the Admiralty rooms on July 5, 1907, Lord Tweedmouth, First Lord of the Admiralty, and Sir John Fisher asked Beresford to state exactly what he wanted for the Channel Fleet. An extract of the record of the meeting showed that Beresford was unprepared to state what he wanted without taking counsel. But when Fisher and Tweedmouth offered him a definite schedule of reenforcements, the meeting ended with the strong assurance from Beresford: "This gives me the force I am hallooing for. You may depend on it; the cordiality between us exists. There is no want of cordiality on my part."

Unfortunately this pleasant impression was shattered within a fortnight when in another letter to the first lord, Beresford repeated his view that the Home Fleet was a fraud and a danger to the state. When this action was sharply resented, Beresford had the audacity to write:

> I note that their Lordships consider that the admiral who in war is responsible for the fleet in the home waters should not express his opinion as to its efficiency in time of peace.

At this juncture the controversy began to involve other personalities. Captain Doveton Sturdee, a post captain under Beresford, was appointed to command a battleship. This was routine procedure since all captains had to command battleships in order to reach the rank of rear admiral. Beresford, however, looked upon this as an attempt to take away his assistant. He viewed the case of the relief of Rear Admiral Montgomerie in the same light. Soon after this he heard unofficially that Vice Admiral Custance was to be transferred. Custance was second in command of the Channel Fleet, and is said to have "supplied Beresford with most of his brains." Once again Beresford boldly took the Admiralty to task. He wrote:

> It has come to my notice that a feeling has arisen in the service that it is prejudicial to an officer's career to be personally connected with me on service matters. This may not be a fact, but the impression I know exists. It is certainly borne out by the late procedure.
>
> The removal of three such important officers from my command at or about the same time will add enormously to my exceptionally hard work.
>
> . . .
>
> It may not have been intended, but it most certainly has the appearance of a wish to handicap and hamper me in carrying out the responsibilities connected with by far the most important appointment with the Empire.

Although such language from a subordinate to the Board of Admiralty is without parallel in English history, the board did not feel able to take adequate disciplinary steps. This in itself was a triumph for the offending admiral.

In June, 1908, Mr. McKenna relieved Lord Tweedmouth as First Lord of the Admiralty, and he at once took a strong stand in support of the first sea lord. After some correspondence between the first lord and the commander of the Channel Fleet, it was decided to relieve Beresford at the end of two years service instead of the usual three. By this time, however, the famous "signal incident" had occurred. It involved Admiral Sir Percy Scott and threw another aspect upon the whole question of Beresford's tenure of command.

The signal incident occurred on July 1, 1908, when the Channel Fleet was cruising. Beresford had taken Scott's First Cruiser Squadron under his own command, and when H.M.S. *Argyl* and H.M.S. *Good Hope* were in a position exactly abeam, Beresford raised a signal which if obeyed would have caused the two ships to collide as in the case of the *Victoria* and *Camperdown*. The signal was plainly seen by hundreds of officers and men; it was copied by the officers of both ships who later attested the positions of the vessels. Regulations demanded that Beresford keep his signal flying until Scott answered, "I see your signal and quite understand it," or "Do not understand your signal." Scott flew the latter signal but did not make the fatal turn to port; instead he turned to the starboard. Beresford then gave himself completely away by signaling: "Did *Good Hope* take in signal to turn to port? If *Good Hope* took in signal to turn to port and rear admiral thought *Good Hope* was too close to *Argyl*, rear admiral was right in turning to starboard." Sir Percy Scott had been at sea too long to think that the *Good Hope* was too close to the *Argyl;* he knew it. When the fleet was docked the news of the incident was communicated somehow to the London *Times*, and an accurate account of what had happened together with a sketch of the positions of the vessels appeared. The incident raised grave doubts as to the competence of the commander in chief of the Channel Fleet.

Lord Charles Beresford's account of the incident is given in his book, *The Betrayal* (King, London, 1912). He quotes Mr. McKenna as saying in the House of Commons, "the signal was not dangerous," but he then makes the blunder of quoting the whole speech verbatim in his own appendix and it reads, "*the maneuver was not dangerous.*" The maneuver as Scott executed it was not dangerous, but had the signal been obeyed, fatal consequences would have ensued. After his retirement Sir Percy Scott answered Beresford's allegations in an article in the *British Review*, April, 1913, entitled "A Reply to Lord Charles Beresford." I do not believe that anyone can read *The Betrayal* and the "Reply" without feeling that Beresford made a bad case of it. Scott leaves him with scarcely a shred of professional prestige.

On March 24, 1909, Lord Charles Beresford hauled down his flag and the controversy took on a political aspect. Beresford capitalized upon his political associations

and made his appeal to men in high station. He wrote directly to Prime Minister Asquith saying:

> During the whole of my tenure of the command of the Channel Fleet proper, that force, owing to the number of vessels constantly withdrawn from it for purposes of refit, has never, even for a day, been equal to the force which it might have to encounter in home waters. During the period the fleets in home waters have not been organized in readiness for war, and they are not organized in readiness for war now, today.

This bold course of action shook the confidence of the government; and Beresford, instead of finding himself at once on the retired list, had the satisfaction of seeing the Admiralty submit to an investigation. Thus for the first time in history the Board of Admiralty was placed on trial to "defend itself against the charges of an undisciplined subordinate," and the sea service was treated to the unusual spectacle of seeing an important officer violate the fundamental tenets of discipline with impunity.

The investigation soon disclosed the weakness of Beresford's case. He was opposed to having Sir Arthur Wilson as a member of the board, although every civilian and naval officer knew that Sir Arthur's impeccable honesty and unrivaled knowledge uniquely fitted him for the position. In this matter the Prime Minister again deferred to Beresford saying that even if Sir Arthur Wilson was not a member of the board, "they could submit all evidence to him, call him as a witness, and attach greatest weight to his opinion." Vice Admiral Custance directed Beresford's case, while Mr. McKenna ably upheld the cause of the Admiralty. The affair dragged through seventeen sittings. In the later stages of investigation Beresford greatly harmed his own cause by bringing in material supplied by henchmen at the Admiralty in order to extend the charges to include Admiralty plans for trade protection. This was such an obvious attempt to bring in extraneous matter that the Prime Minister felt obliged to speak sharply with him.

The report of the committee of the cabinet ran in part as follows:

> In the opinion of the committee, the investigation has shown that during the time in question no danger to the country resulted from the Admiralty's arrangements for war, whether considered from the standpoint of the organization and distribution of the fleets, the number of ships, or the preparation of war plans.
>
> They feel bound to add that the arrangements, quite defensible in themselves, though not ideally perfect, were in practice seriously hampered through the absence of cordial relations between the Board of Admiralty and the Commander in Chief of the Channel Fleet. The Board of Admiralty do not appear to have taken Lord Charles Beresford sufficiently into their confidence as to the reasons for the dispositions to which he took exception; and Lord Charles Beresford, on the other hand, appears to have failed to appreciate and carry out the instructions of the board, and to recognize their paramount authority.

Since the report was in the nature of a compromise, it did not give the Admiralty sufficient strength to place Beresford on the retired list. King Edward's sympathies throughout the investigation were with Lord Fisher, and the King took the trouble shortly after to command his presence at Buckingham Palace, saying that Fisher's conduct throughout the "whole disgraceful affair was dignified and courageous."

Fisher's position at the Admiralty was nevertheless greatly weakened. To add to his difficulties there were such vexatious affairs as the "Bacon letter" incident. After having made certain that Sir Arthur Wilson would succeed him as first sea lord, Fisher resigned his position in January, 1910.

The lessons of the controversy are clear. The less a civil government meddles with the administration of the navy, the better. One of the most serious offenses which a naval officer can commit is to make a frivolous complaint against a superior. If a government accepts the word of a subordinate against his superiors, discipline is bound to suffer. The effect of the whole Beresford-Fisher affair on the discipline of the British Navy was unfortunate. Admiral Bacon says:

> The discipline of the Navy was badly injured by the condonation of insubordination by the cabinet. Unquestioning obedience no longer was looked upon as essential. Criticism of seniors was introduced; and the effect of the finding of the cabinet committee and their subsequent inaction was noticeable in the recent *Royal Oak* affair.

DECK OFFICER TRAINING FOR THE MERCHANT MARINE

By Lieutenant Commander Thomas W. Sheridan, U. S. Naval Reserve

THAT's the way!——ay bane vant a yob." Two husky young Americans were practicing "Scandahovian" as "she vos spoke" so that they could get a "yob" on an American ship! It was a quarter of a century ago and we had just graduated from a state training ship and were looking for a job. But there was "nothing doing" as soon as the foreigners who officered American merchant ships found out that we were Americans. Of one well-known line, it was said that "the only thing American about it was the flag and that was made in Liverpool." Aliens did not like the idea of Americans, mostly from the school ships, creeping in. It was a peculiar thing that much as the British and Germans disliked each other, they would unite always against the native American, so that the small but increasing group of school-ship graduates had a hard time prying their way in.

An oft-told tale is the one concerning the San Francisco immigration inspector who was checking off the crew of an arriving American merchant ship. A heterogeneous conglomeration of representatives of every land but America answered the roll. "Any Americans aboard?" he exclaimed in exasperation. "Yah," said the mate, "der vos me and anudder Yerman."

A combination of circumstances had brought about this situation. One thing was the fact that the eye and urge of America was to the westward in the years immediately after the Civil War and our mercantile marine, as well as the Navy, languished. Then when, in the face of obstacles, we were compelled to create an adequate merchant marine we found that there were no officers to man the ships. True, we did have a school ship in New York graduating about thirty-five cadets a year, and later one was established in Philadelphia and another in Boston, but the combined tonnage of these three vessels was less than the tonnage of one of the two training ships employed by one German line, the North German Lloyd, for training its officer personnel. All over Europe, in small and large ports, were ships, barks, brigs, and every kind of small and large sail craft, sailing out on deep-water training voyages, in the fulfillment of their mission of producing officers for the mercantile marines of the various nations. The plethora of merchant marine officer personnel in Europe, compared with the shortage in the United States, naturally resulted in the aliens swarming in and, under our then lax immigration and naturalization laws, filling all the available jobs.

But waiting for naturalization was too slow for some of the impatient, and in 1892 Congress passed a law naturalizing the foreign officers of the *New York* and *Paris* when they were placed under the American flag. To our eternal disgrace it was considered necessary to do a similar thing, on a wholesale scale, in 1915, when a law was passed allowing hundreds of foreigners to command and officer American merchant ships, under what was known as "red ink tickets."

It is now realized that to allow such a vital economic unit and potential naval aid as the mercantile marine to be alien dominated constitutes a grave menace to the welfare of the nation. Earnest efforts have been made during and since the war to Americanize the American merchant marine. The beneficial effect of stringent immigration laws has greatly restricted the flood of foreigners.

This emphasizes the fact that there must be some effective medium for recruiting and training the right kind of native American for officering our expanding marine. Of course, when we refer to officers we mean both deck and engineer officers because the merchant marine still, and probably always

will, continue to follow the old naval custom of having the deck officers and engineroom officers divided into different corps. For efficiency this is probably the better system. In this article I will confine my remarks to the training of deck-officer personnel.

Recently there has been much discussion of the varied methods recommended for training merchant marine officers. A questionnaire sent out by the Shipping Board requested opinions on three different systems. Those discussed, were, first, utilization of the Naval Academy, by accepting such additional midshipmen as might be necessary; second, organization of a national merchant marine academy; and third, expansion of the present state training ship facilities by encouraging more states to start schools and by enlarging the present schools so that residents of other states would be allowed to attend the training ships of the states supporting such schools.

Sober thought should eliminate the Naval Academy from consideration in such a proposition. Surely that institution has a sufficiently arduous mission in properly preparing competent naval officers, without branching out into an alien field of educational effort.

I think that those who favor an academy ashore do not fully comprehend just for what kind of a career they are about to prepare the sea-seeking youth who would attend it. I do not favor the idea of any kind of a shore academy for the training of deck-officer personnel because I believe that it is predicated on an entirely false concept of the character of those who go down to the sea in ships as officers of our mercantile marine. This concept is closely akin to the same one that fills the land at present with multitudes of men "deep versed in books but shallow in themselves"—impractical academic theorists, in whom education is a curse rather than a blessing.

Consider the end! The officer of a merchant ship must be an individual of a unique *sui generis* type. To have a permanent body of American merchant marine officers, the men selecting this career must, above everything, be filled with "sea zest"; a rare quality (or defect?) which enables a man to enjoy life afloat in the not altogether ideal conditions existent in a merchant ship. All training and educational effort should be directed toward the accentuation of this essential characteristic. Granted that the theory of a life in the merchant marine might be taught in a shore academy, the actual ability to live and to enjoy that life can only be found in proper sea training afloat. Seamen are made at sea, not in shore academies.

Let the many eminent erudite individuals who have voiced opinions concerning how officers should be trained for the merchant marine give a thought to the conditions of that life and the actual practical necessities of the merchant officers' education.

Freighters form the vast majority of any well-balanced merchant fleet. An understanding of the conditions of the life of an officer in a freighter will well illustrate why it is stated that the first quality for sea success is that a man should be dominated by "sea zest."

The average freighter of 13,000-ton displacement will have a deck complement of three mates, six or eight seamen, a carpenter, and a boatswain. The officers stand watch in three, in addition to their regular duties. In port the second and third mates are generally required to be aboard all day and take alternate nights off. Some lines have night mates who take the night watches for the first few nights in the home port. However, the ship will be away about six to eight weeks for every week spent in the home port. The average second or third mate can expect to get about fifteen or twenty nights home a year. There are no vacations with pay and no such thing as shore duty. True, officers do frequently get shore leave when business gets poor, but without pay. Pension systems are rare.

There is absolutely no social life on board a freighter, nor could there be with the all-day and all-night whine of the winches. Rarely are any visitors allowed on board.

Though the merchant officers' professional requirements are by no means as broad and profound as those of naval officers, his close personal attention thereto is demanded in a much more intense manner than in the navy where there is plenty of assistance in the shape of the large body of petty officers. The merchant officer has to do much of the work that would be done by the enlisted personnel of the navy. It is by no means an unusual thing for the whole crew to be helplessly soused on the ship's departure from a foreign port and the three officers required to let go and heave in the lines, lower and secure the twenty or more

booms, and then steer the ship until the "noble mariners" sober up!

At sea the officer will be, except for the man at the wheel, alone on the bridge, and will have to take and record all of the data concerning sights, bearings, and log book entries.

The chief officer has general charge of the cleanliness and upkeep of all the ship outside of the engine-room. He also directs and is responsible for the stowage of the cargo and for its discharge. Ability to utilize the meager materials provided for rigging gear and to keep the ship in proper condition is the essential characteristic of the successful chief mate of a ship. "Look for the dirtiest man in the ship," was the old and ofttime accurate characterization of the chief mate of a freighter because he frequently had to pitch in and rig gear or mix paint himself. He must be an individual with patience, inexhaustible energy, intense interest in his work, inspired initiative, an agile mind, and unusually rugged physique. Now, surely, a man with those qualities is not going to sea and stay at sea unless he is filled with an unquenchable love for the life.

"But we should change the conditions of sea life so that our boys can get the comforts, convenience, and the same working conditions as life ashore," say some. Rot! Who would pay for that? Remember that in the shipping business we have to meet the competition of the world. No, there are enough young men in the United States to whom, if taken young and not spoiled, this existence with all its hardships and discomforts would appeal. There are those devoid of domesticity and filled with *Wanderlust,* who are at home where they are, and who have the quality of "sea zest," to whom a life at sea appeals. This type should be caught young, properly trained, and hardened for the life, and all others should be discouraged from undertaking seafaring in the merchant marine.

The training and education should be done aboard a cruising ship, and therefore I think that if any governmental agency is going to do this the state training ships should.

Back in 1917 figures were compiled showing that approximately 2,000 cadets had been graduated from all the state school ships since the inauguration of that system in New York in 1874. Of course, many of these had died or had gone into other professions—the Army, the Navy, scientific, and exploration work had claimed many. But it may be truthfully said that the concept of the school-ship officer dominated the merchant marine and that the leaders of the native American merchant marine officer class were the graduates of the three state schools of New York, Massachusetts, and Pennsylvania.

The state school-ship method is by far the best that has been developed in the United States for training officer personnel for our merchant marine and, with certain modifications, I believe that it is the best possible system. It is true that far too many of the graduates sicken of the sea after a few years and seek the shore for the delights of domesticity. This is due to one of several defects in an otherwise good system. The outstanding defect in the school-ship training is that the system does not develop that earnest undiluted love for the sea life which one should have to follow the sea. Thus some good work goes for naught, though much of it was salvaged in the Spanish-American, and in the last war, when the national situation was largely saved through the fact that there was a great reservoir of trained material on which to draw. That trained material ashore is of little use to the merchant marine for which the system was supposed to be designed to benefit.

This major defect in the state training-ship system is caused by the ships spending far too much time in home waters. The only cruises made are short summer yachting excursions to tourist rendezvous. This destroys the good effect of the excellent technical instruction imparted. It is often said, and said truly, that, while the young American school-ship graduate compares favorably in many respects with the German and other foreign school-ship graduates, he has a rather lackadaisical and yachting attitude toward his job compared with the serious interest of the foreigner. The reason is undoubtedly because the foreign school-ships spend nearly all their time cruising at sea, and the amateurish attitude is entirely eliminated.

The ideal ship, which should be specially constructed for the purpose, is one that would carry not over 100 cadets, so that there would be adequate opportunity for all to acquire experience in steering, O.O.D. duties, and other things which are fixed in

number on a ship, whether large or small. The best motive power would be sail with a Diesel engine, so that extended training cruises could be taken at minimum expense. All facilities for carrying on the instruction should be installed in the ship so that no shore establishment would be required.

Sail, I say, because there is, as Admiral Plunkett maintained, no experience that a boy can have which equals the man-building effect of a few years in a sailing ship where the fundamental virtues of courage, intelligent initiative, hardihood, physical and mental alacrity are, under proper conditions, developed as no other experience can develop them. No sea-seeking youth should be denied this experience in the first years of his career. A four-masted bark of about 1,500-tons displacement would, in my opinion, be the best rig.

"Catch them young" is certainly essential to a thorough indoctrination of sea zest and the settled sea habit. Entrants to the school ships should be under seventeen. Between fifteen and seventeen is the best age. They should have educational qualifications equivalent to the first two years of high school. More than the first two years is not of much value, as the last two years are generally devoted to the special purpose of preparation for college.

Proper utilization of time and careful planning of the cruises to attain the maximum benefit is of paramount importance. I believe from actual experience that much more can be learned, in the same time, at sea than ashore, if the cruises are properly planned. I stress this point because an objection often made to the idea of training afloat is that it does not provide the same educational opportunities as a shore establishment would.

Expatiation on the subject of the course of instruction is unnecessary, as the professional requirements of the merchant marine officer are well known. The main thing to be emphasized is that it should be arranged so that all professional subjects are treated in a thoroughly practical manner. "To be able to do, rather than to explain" is the great *desideratum*. One phase of instruction which, with the exception of the German, some of the Scandinavian, and one of the United States school ships, has been grossly neglected is the practical application of the science of ship stability to ship loading and handling. Only lately a large British passenger steamer filled with American passengers and cargo, was capsized at sea with heavy loss of life, due to the captain's apparent ignorance of this vital factor.

It must be realized that the mere inculcation of professional knowledge and technical ability is a very minor matter compared with the far higher objective of graduating men of high character, well developed qualities of leadership, and a thorough love of and devotion to the profession. Actually living the life afloat, close to one of nature's grandest manifestations, should be a much greater incentive to this than existence in a shore academy.

There should be a system of training these cadets so that they will be able to coöperate with the Navy in the next war. At present we have a large paper merchant marine naval reserve, but there is absolutely no training of any of the personnel of this reserve, either officer or man, in gunnery, signals, and other naval subjects.

Of course no man can be said to have reached the true standard of cultured citizenship who has not prepared himself adequately to participate in the defense of the nation. Especially is it of paramount importance in a profession so closely allied to this vital matter.

Provision should be made to enroll the cadets in the state school ships as midshipmen in the Naval Reserve; the same as is done with college students in the Naval Reserve Officer Training cruises. A careful survey should be made concerning the manner in which the merchant officer could be of maximum assistance to the Navy in war time and the training arranged accordingly. It would be a good thing to have the cadets take short training cruises each year with the fleet. This could be done in the intervals between the cruises on the school ship.

Two properly planned five-month cruises a year to ports where methods of cargo stowage and ship handling could be studied would be an excellent cruise routine. Four of such cruises, in the two-year course, would, with a properly balanced curriculum, graduate unsurpassable material for merchant officers. A year's experience as a cadet, junior officer, or in some other subordinate rating, would produce the finest type of third officer and prospective captain for the merchant marine.

MERCHANT MARINE OFFICER TRAINING

By Lieutenant Commander F. E. Cross, U. S. Naval Reserve

THE first of the new merchant ships now being built under the liberal provisions of the Merchant Marine Act of 1928, providing for an award of ocean mail contracts to American steamship lines for the transportation of passengers, mail, and cargo on the principal trade routes from Atlantic, Pacific, and Gulf coast ports of the United States, are already in active service. The program as laid down calls for the construction in American shipbuilding yards of sixty-eight vessels of latest design throughout, varying in size and speed according to the requirements of the designated trade routes, and aggregating 700,000 gross tons. Besides this great fleet additional merchant tonnage of importance is being built, or contracted for, consisting of coastwise vessels, freighters, tankers, and yachts.

The vast national importance, commercially, industrially, and from the viewpoint of naval preparedness, of this marked activity in merchant ship building can hardly be overestimated. Not uncommonly referred to as a "renaissance of American sea power," or as the "nucleus of a new merchant marine," the development has had the concomitant effect of eliciting a long delayed though much needed awakening concerning the officer personnel on board American merchant ships. And the United States Shipping Board, together with American steamship companies and other agencies interested in merchant marine problems, has widely expressed the opinion that a more satisfactory method of training merchant marine officers should be adopted. This has resulted in the advancement of a number of new ideas on the subject, not only by professional seafarers, but by the maritime interests affected.

These discussions have not been because of any shortage of ship's officers. On the contrary there are at least three thousand "licensed men," as American merchant marine officers are often captioned, without ships, of whom a large percentage have accepted positions on land in order to gain a livelihood.

It quite often happens that ship operators and seamen are asked: "Where do ship's officers get their training? How long are they required to serve? Where do they learn navigation, or marine engineering?" To answer these or similar questions correctly, one cannot generalize, because of the fact that the training of American merchant marine officers has been so diverse. The majority of our merchant ship commanders and officers are foreign born and have received their training in the forecastles of foreign or American ships. Other foreign born officers were trained abroad under the apprentice system and have served as officers, and even commanders, in foreign flag services. A small but increasing proportion are graduates of state nautical schools. An equal number are former enlisted men of the U. S. Navy or Coast Guard.

Although data which would be of value for a truly accurate analysis of this phase of the merchant marine officer personnel question are lacking, the table below, representing the various types of training and the percentage of officers trained in each for the years 1910 and 1930, is doubtless a close approximation to the actual.

United States Merchant Marine Officers

Group	*Where trained*	*Percentum*		*Native or Naturalized*
		1910	*1930*	
1.	American or foreign ship forecastles ...	50	25	Naturalized
2.	American ship forecastles	10	20	Native
3.	U. S. Navy or Coast Guard (former enlisted men)	5	15	Native
4.	Foreign ships (former officers)	20	20	Naturalized
5.	Foreign ships (former apprentices) ..	5	5	Naturalized
6.	State nautical school ships	10	15	Native

By these comparisons it will be noted: First, that in the three groups comprising

native born officers there has been an increase of 100 per cent during the 20-year period, such groups now constituting 50 per cent of the total officer personnel; second, that there is a slight trend away from the almost traditional American merchant marine custom of promoting meritorious seamen to the bridge with no other training than is received in ships' forecastles.

Unlike most great sea powers the United States has no national system for training future merchant marine officers. Something similar, however, exists in the two years' training given by the four state nautical schools. At these schools, which receive a federal as well as a state endowment annually, the cadets upon graduation, and if not less than nineteen years of age, are without further sea experience eligible and encouraged to take the government examination for a third mate's or a third assistant engineer's license, good for ocean power vessels of unlimited tonnage. With nothing other than a brief two years' period of instruction, the graduates are found competent, according to federal ruling, to take charge of a watch on vessels ranging in size from a mammoth liner to a small coaster.

Whether or not this requirement applying to school-ship graduates may seem preposterous, our attention nevertheless is invited to the fact that such two years' preparatory instruction is less by at least two years than that demanded of cadets or apprentices in competing merchant marine services. This strongly emphasizes the fact that the present-day American school-ship graduate has trod a short primrose path to the goal of his immediate ambition, namely, the acquisition of a third officer's license.

Before the cadet's graduation from the nautical school (recently renamed Merchant Marine Academy) he is advised by his instructors that even after he has finished at the school and passed the government examination which will secure for him his third officer's license, he is not likely to succeed in obtaining a junior officer's position. Thus is he saved from complete disillusionment when, in his endeavor to secure a junior's billet, he finds that his freshly obtained certificate of competency fails him in his quest, for the young graduate is candidly informed by marine superintendents and other seafaring men whom he may importune, that he has not yet had sufficient training for the position his license entitles him to hold; and that, in order to obtain such necessary practical experience, which alone can adequately qualify him for watch officer's duty, he should go to sea in a minor capacity for at least twelve months. Dismayed by this authoritative, yet honest, exposition of his nautical, or mechanical ability, he rightfully concludes he is not wanted as a ship's officer.

Naturally, the prospective officer's reaction to such early disappointment is that someone has let him down. While he cannot justly lay the charge against any particular person, yet certainly he does against the system that trained him. The misapprehension under which he had labored now dispelled, he will, if the sea continues to hold his interest, pocket his pride as well as his "ticket," and be thankful for an opportunity to get to sea by signing on as quartermaster, oiler, or seaman. Only in such capacity will shipmasters be willing to take him, that he may acquire the necessary elementary knowledge of life and work in the merchant marine. Certainly to avoid such training, which occasionally is done by honor graduates, is a mistake which must be paid for, not only by the young man concerned, but by the ship on which he serves and, in only less degree, by the merchant service generally.

Contrasted with this lenient training system, enabling school-ship cadets of only two years' instruction to qualify as officers on shipboard, we find that, antedating the year 1908, the examiners of the U. S. Steamboat Inspection Service credited the two years' school-ship course as equivalent to only one year of sea service and demanded that graduates produce evidence of having served two subsequent years on merchant vessels before being eligible to take the examination for original license. This continued until 1908 when, a lower grade of license being added, the two years' extra sea service was reduced to one year. The change remained in force until 1917 when, owing to a shortage of merchant marine officers during the World War period, the one year's extra sea service was waived by federal ruling. This continues to the present day, no readjustment having subsequently been made to the 1917 requirement.

A return to more rigid requirements is not the only argument against the practice

in vogue of making ship's officers of young men who have had only two years' merchant marine academy training, two-thirds of which time has been spent at the shore base. Such inadequate preparation for the manifestly important duties devolving upon ship's officers is in direct contravention to the custom which prevails in American law, medical, engineering, and other professional seats of learning where, particularly in recent years, the preparatory requirements and college curricula have been greatly increased. Therefore, is it not reasonable to expect that the merchant marine should also demand more, rather than less, preparation for service?

The opinion that school-ship graduates should discontinue the practice of going to sea in the forecastle has long been advocated, and with very good reason. But since our merchant marine has no substitute which can give ambitious young seamen the practical training necessary adequately to qualify them for officers' billets, we are confronted with either adopting the foreign apprentice system, or returning to the requirement of forecastle or petty officer experience covering a period of at least twelve months.

Surely we cannot deceive ourselves into believing that a thorough knowledge of practical seamanship on the part of merchant marine officers is not an essential qualification and one that can be acquired only on shipboard. Such practical training, however, should be in conjunction with the merchant marine academy course, and should be given the cadet at the end of his first year at school, instead of its being left for him to obtain by haphazard fashion after graduation. Thus, by lengthening the course from two years to three, the graduates should, with the additional year's training, be competent to perform the duties of a junior deck officer or junior engineer. And no longer would he have to suffer the humiliation of being held by seafaring men generally as little more than doubtful material for a ship's forecastle. For it is indeed true that ever since the beginning of the school-ship training system, school-ship men have always been greatly handicapped, to say the least, by the inadequate two years' training they have received. That this system has brought about the small percentage of graduates who have followed the sea as a career, there can be no doubt. Thus has it proved its inefficacy, yet it can be corrected by the simple expedient of including in the present curriculum the extra year of practical training as above suggested.

Another suggestion pertaining to the system of training merchant marine academy cadets which the writer perforce would offer, is that during the winter term the curriculum for all first year cadets be the same; then, in the spring, before the annual cruise, the class be divided into a deck and an engineer corps according to the trend and ability of the individual members. At the beginning of the second, or practical training year, arrangements could be made with steamship companies and shipbuilding yards to place the deck and engineer cadets as ordinary seamen and machine-shop apprentices, respectively. The third year should, of course, be spent at the academy for the study of advanced subjects and final general instruction.

Higher education, or its equivalent, as given at the Naval Academy or Coast Guard Academy, has not infrequently been suggested as a means of furthering educational improvement among the officer personnel in the merchant service. There is a psychological aspect in connection with this theory which needs be considered. Well do we know that the youth who is fascinated by the sea (a state of mind which is the beginning of practically every career on the sea) becomes so during high school age and that afterwards, say at nineteen or twenty, the glamor fades. Therefore, to restrain from personal contact with blue water him who has the sea in his blood and to compel him to pass through high school instead, and afterwards to face four years at either of these great government schools of higher education, even with the advantage of annual summer cruises, is bound to defeat the very purpose of his training for service in the merchant marine. Because the attractions of the land—education, a wider human companionship, an interest in sports, domestic living—would open new horizons to his vision; and by the promise of greater happiness and larger success, or what is considered as such in life, lure him away from his passion for the sea and ships, at least in a vocational sense.

Indeed, such advantages a student at a school of college standing would be unwilling to deny himself the opportunity of at-

taining, especially, since in his college years he has already been in contact with them. Although after his graduation he probably would welcome a foreign voyage or two, it is inconceivable that he would willingly accept, as a future career, the hard unnatural life at sea in the merchant marine. But assuming that a few graduates would stick it out, they would, at twenty-one or over, find the plain tasks on shipboard, however necessary in training for a sea career in the merchant marine, most distasteful to them. Yet the same tasks performed by youths of seventeen, or eighteen, would be accomplished avidly and with unquestionably better results.

He who would follow the sea must acquire the sea habit; a significant trait which denotes the seaman and gives expression to his paramount interest in the sea and ships. Moreover, it is a trait which can be indoctrinated only in the young, at a time when the allurements of the shore have not yet chanced to beckon too enticingly. For it is then, during one's youth, and only then, that the sea can lay successful and permanent claim upon one. Thus is seen the advantage to a youth in beginning his sea career at an early age, besides his better chance of thoroughly mastering his calling. These facts are demonstrated in the lives of all great seamen. Neither is there, to the writer's knowledge, a single merchant marine commander, or officer, who began his sea career later than in his teens.

It is not that education for seamen is not a good thing. Certainly, it is. But if a youth feels destined to follow the sea in the merchant marine he should be given the opportunity to do so before he ceases to be fascinated by it. If that privilege is granted him, he will see plainly the pathway leading to his future career. And although his scholastic education will have ceased when he graduates from one of the merchant marine academies—considered by the state boards of education as equivalent to high school instruction—his opportunities of acquiring increased learning in the years to come are, in the course of a seafaring life, unexcelled. Whether he hails from educated surroundings or not (all classes of society being represented on the sea) he can, in time, by well selected reading, and through his own efforts, acquire a fair education. But the stamp of the sea life will be upon him; and rightfully it should and must be, or he will leave his calling to accept a shore position.

Therefore is seen plainly the importance of a youth beginning his sea career in the merchant marine not later than during his high-school years. No doubt such training can best be given at merchant marine academies, supplemented by training ships that make annual voyages of about six months' duration, as at present. But the two years' course at these schools should be extended to three years, as above suggested. Nor need the state in such case be called upon to bear any additional expense, since all second-year cadets would be absent from the academy for the twelve month period of practical instruction. And the cadets need suffer no extra expense. On the contrary the cadets would receive, during their absence, appropriate remuneration for services performed while at work on shipboard, or in machine shops ashore.

For the purpose of coöperation among the merchant marine academies to the end that the most satisfactory training be given, and in view of the federal annual endowment bestowed upon states having such schools, a common system of administration, discipline, curricula, etc., should be maintained. Also, arrangements could be made so that candidates seeking entrance to the schools, but who are restricted on account of residing in other than school-ship states, should, where vacancies exist, be given the privilege of qualifying for admission.

Recently there has been advocated a national merchant marine academy to replace the existing state academies. While such a school would serve to centralize the efforts at present being put forth, it is doubtful if so large an institution could claim more satisfactory results than would be obtained by the concerted efforts of several smaller academies. Certainly until the proposed national system of training, together with suitable training ships, has been established, the state academies should continue their efforts; and by lengthening the course to three years, enlarge the work they have been engaged upon for so many years in the interest of the American merchant marine.

There will always be ambitious youths who have not been able, through some cause, to obtain merchant marine academy training. Such candidates should, after serving the full required time at sea in a satisfactory capacity, be eligible for officers' examinations and advancement, as at present.

By Ewing Galloway, New York

ONE OF THE DIFFICULTIES OF THE EXPORT TRADE

The cases of gasoline tins in the foreground are all carefully marked "This side up." Iquique is the port through which nitrates are exported, and foodstuffs, gasoline, and material for use in the nitrate fields are imported.

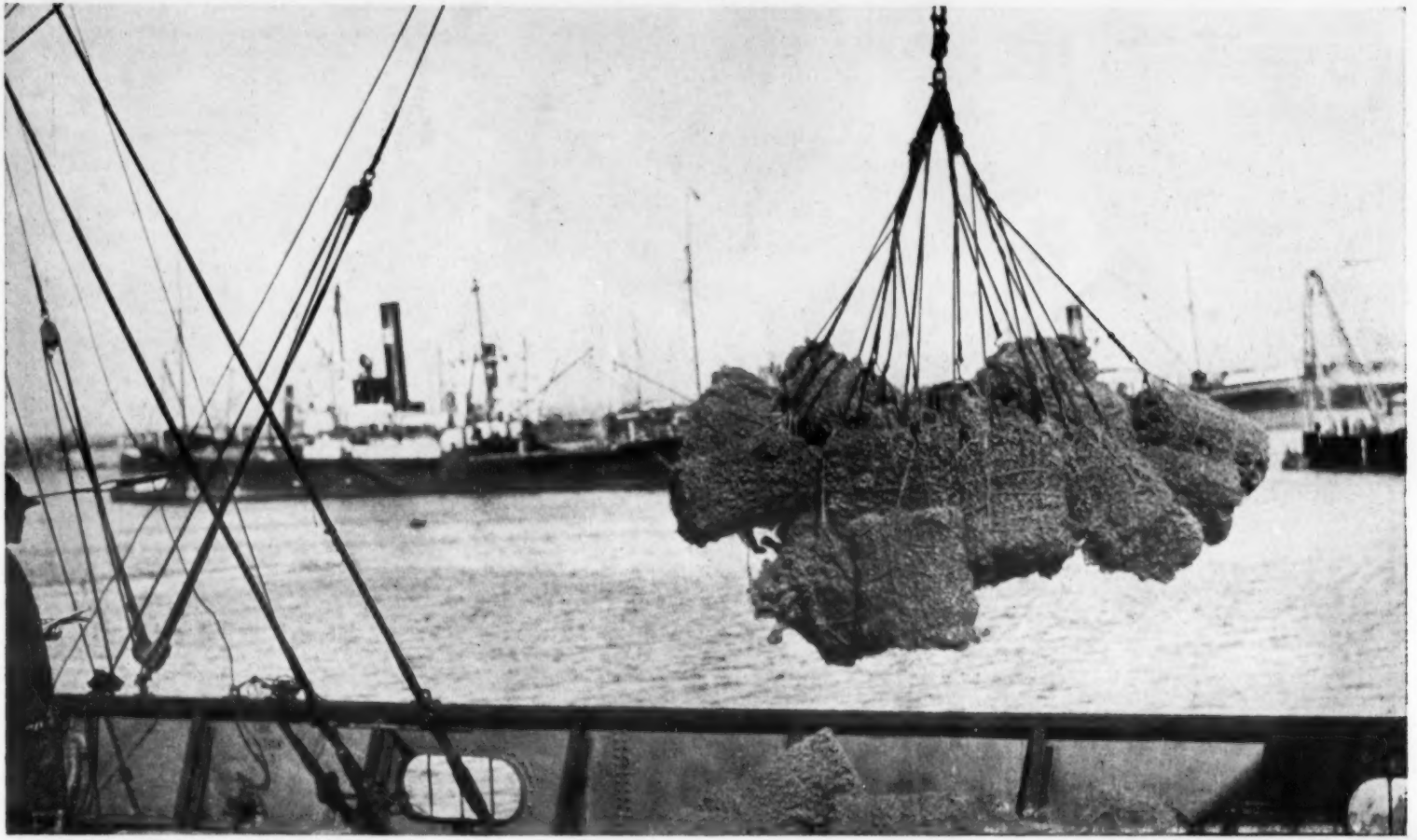

Photo by Gardner Wells—Sold by R. I. Nesmith and Associates

THE COMMENCEMENT OF A PROSPEROUS TRADE

A sample one-ton shipment of sisal being loaded at Casablanca, Morocco, for the United States. This shipment was followed by much larger ones of this material which is grown in Morocco.

Photo by Gardner Welis—Sold by R. I. Nesmith and Associates

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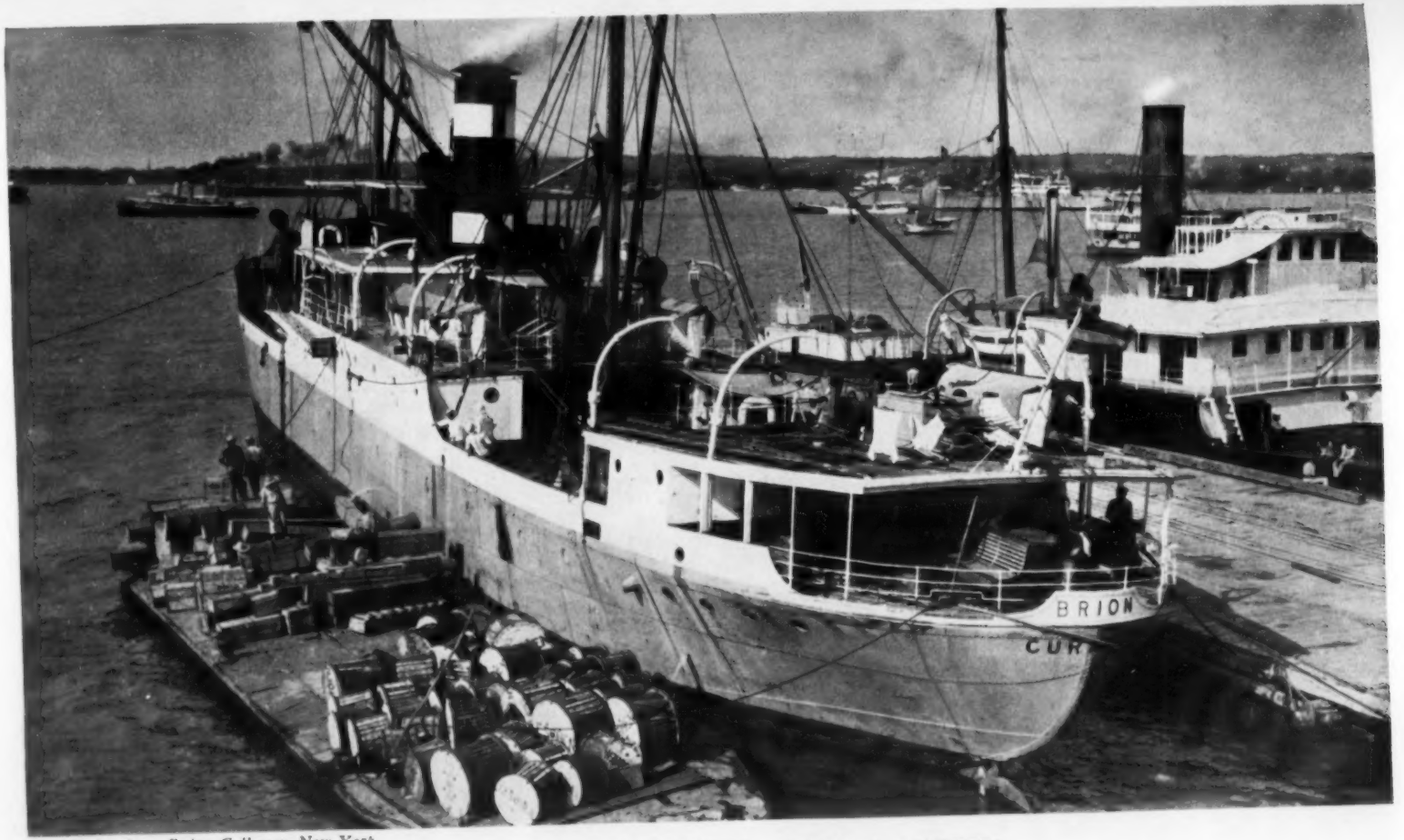
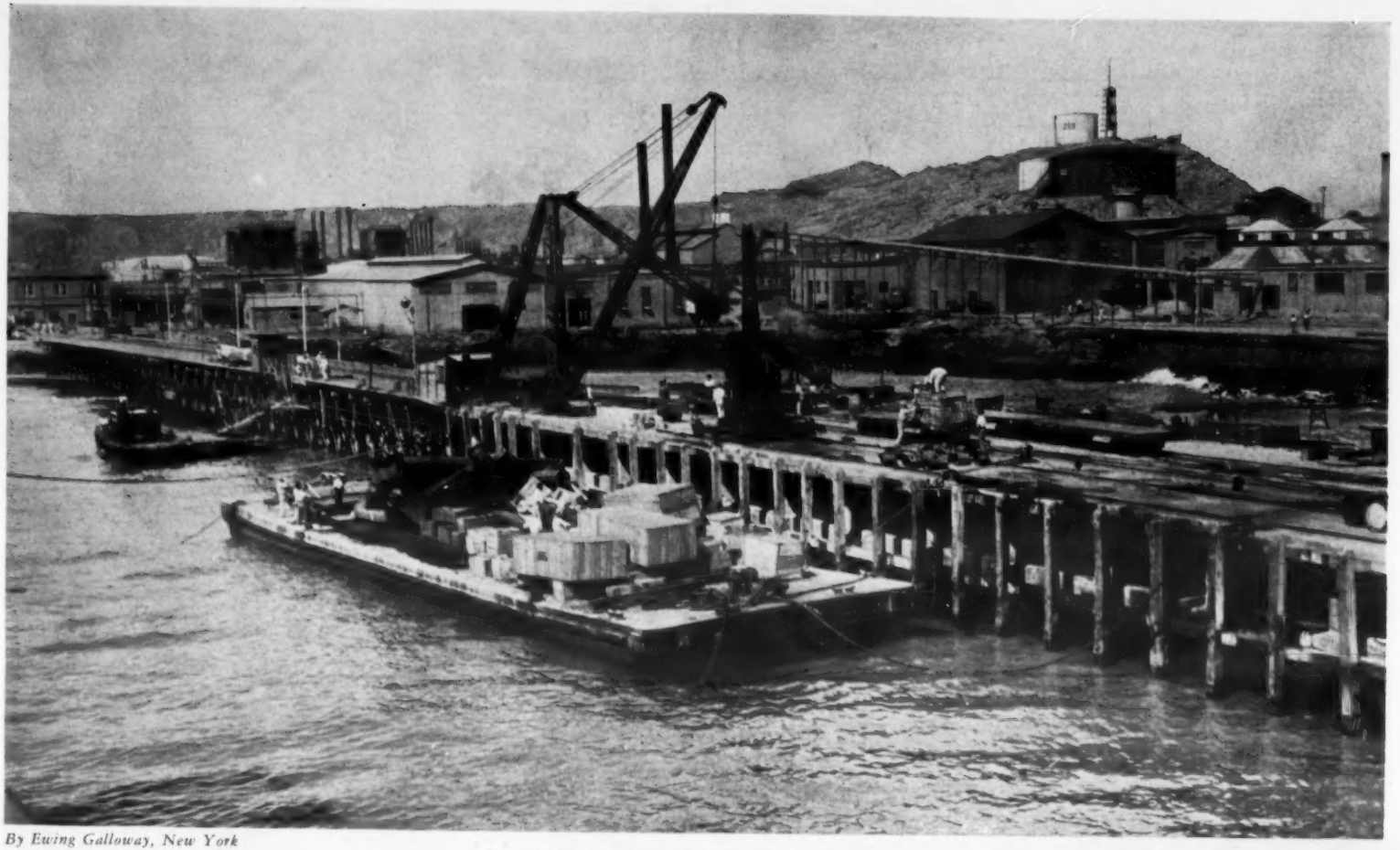


Thos. F. Lee from Ewing Galloway, New York

UNLOADING AMERICAN WIRE ROPE AT MARACAIBO, VENEZUELA

The international oil companies competing in the Venezuelan fields create demands for a large amount of material.



By Ewing Galloway, New York

MANUFACTURING FOLLOWS THE DEMAND

The port at Talara, Peru, built as part of the development of the oil fields. The buildings on shore house a factory for making tin containers used in the export trade.

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By Burton Holmes from Ewing Galloway

CONGESTION AT THE PORT OF BUENOS AIRES, ARGENTINA

By Ewing Galloway, New York

BUENAVENTURA, COLOMBIA

This post serves a large section of the interior of Colombia whe·e American concerns have been developing the natural resources in the upper basin of the Magdalena River.

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PRIMITIVE CARGO-HANDLING FACILITIES AT THE UPPER END OF THE RIVER MARKET AT GUAYAQUIL, ECUADOR

THE UBIQUITOUS PETROLEUM BARREL
A scene in the harbor of Algiers.

Photo by Gardner Wells—Sold by R. I. Nesmith and Associates.

MATERIAL PROCUREMENT PLANNING

By Captain H. L. Pence, U. S. Navy

We were called upon to make up in a few months for the neglect of years during which self-satisfied provincialism and smug complacency had prevented the most elementary efforts toward a reasonable precaution to meet such an emergency. *My Experiences in the World War,* By General Pershing

We know now that another great war may be won or lost by celerity of industrial mobilization. *Industrial America in the World War,* By Clarkson

IN CONSIDERING the future of the Navy, many of us are inclined to think and reflect in terms of combatant ships, possible operational programs and such training schedules as are required to maintain personnel efficiency. Strategical, tactical, and material proficiency rank high in our scheme of the fitness of things. Most of us are familiar with and react strongly to these features, because they represent something tangible, concrete, and definite in national defense. From them, results become apparent and the immediate future is accurately visualized. Such viewpoints are normal, proper, and essential. It may reasonably be asked, however: do they complete our scheme of preparedness? Have we not something more, another side to our naval and national future which must be given the most careful, serious, and prompt attention? Is not a more positive and detailed system of procurement planning a pressing and vital need?

Procurement planning is understood to be the preadjustment of varying demands for personnel, commodities, and facilities of all kinds in an emergency. In its material sense, it is intimately related to industrial planning and, therefore, covers an extremely wide field.

The Assistant Secretary of War has aptly stated that there are two principal aims of industrial planning, viz.:

(1) To reduce to the minimum, the period between the declaration of an emergency and the time when industry can get into mass production, particularly on essential munitions of war.

(2) To develop such a system for the control of industry that every essential facility will be assured of adequate amounts of raw materials, power, money, labor, and transportation.

Adequate procurement planning, as thus visualized, appears to be and is a tremendous task. While of particular application to the planning efforts of the Army and Navy, such planning is, in reality, national in scope. It is pertinent to ask in this connection: Would it be possible for this country under present conditions to control and direct efficiently and promptly a maximum and supporting industrial effort if national existence was in jeopardy? If not, are we, as a nation, really prepared for a major emergency? Under present apathetic conditions, is it not plain that we must be deluding ourselves by a false hope that somehow, as in the past, we will muddle through? In these days of restricted appropriations, extreme economy and limited forces, is not the urgent desirability for such detailed planning more than ever imperative?

Failure to have an efficient system of procurement planning in past wars has been responsible for the loss of many lives, much waste in time and money, together with an entire upheaval of the economic structure of the countries participating—in the last war, practically the entire world.

Planning must not be interpreted as encouraging war. If war comes, planning should lighten and soften its effects. From the standpoint of possible results, planning has everything to commend it. Planning promotes peace, not only because it assures a measure of preparedness and tends thereby to ease the burdens of war, but also, because by its very nature it discourages any nation from taking aggressive action against another equipped for meticulous and detailed organized effort. Reasonable and sound planning, therefore, merits the strong support of all government departments and of all citizens.

Industrial and material planning is, of course, a peace-time function. During an

THE UBIQUITOUS PETROLEUM BARREL
A scene in the harbor of Algiers.

emergency, events move too rapidly to permit of deliberate and extensive planning. Execution then becomes the order of the day. Production and procurement agencies initiate their programs for maximum development. All agencies of war plunge into accelerated activity. Sad, indeed, will it be for the services and the nation if, at such a time, our plans are found to be incomplete or undeveloped. Too late, then, to wish for leisurely days of peace when, if events could have been foreseen, even complicated material plans could have been developed with comparatively modest effort.

The development of efficient procurement planning for an emergency is thus one of the most important problems facing the Navy today. It is not a subject to be dismissed lightly with the observation, "Well, all we have to do is to find out what we want and then adjust matters with the Army," or, "We got what we wanted in the last war; guess we can do it again." Trusting to luck in peace or war is a dangerous business. Conditions are changing constantly and rapidly. Every factor of combat, as well as industry, is being revolutionized by the available facilities of today. A new condition of forces is not arriving; it is unquestionably here. Thus, it would appear that, even assuming that we have progressed to the point where we know what we want, and even if fortune should favor us again with a prolonged preparatory period following a declaration of war, actual procurement will be extremely difficult unless we promptly and thoroughly complete *all* plans of prearrangements.

In the last war, procurement agencies submitted programs of supply without coördination of effort. They proceeded to bid against each other, often within their own departments. Prices rose, congestion occurred, and there resulted an economic crisis from which we have not yet recovered. Unsatisfactory as these conditions proved to be in this country, they were equally bad, if not worse, abroad. Thus, the last war was not alone a naval-military conflict; it was essentially a life and death economic struggle. A future struggle will see these economic features even more clearly defined and emphasized. It is accepted that the war of tomorrow should and will demand some effort or sacrifice from every American. By the same token, the combined economic facilities of the country must and will be promptly and fully utilized. The development of the system by which these facilities are to be utilized in any emergency is properly the duty of this generation, while the lessons of the immediate and illustrative past are still available and capable of accurate interpretation by those best qualified to interpret them.

Time is an important factor in military and naval operations. In reality, it is a predominant factor. The need, then, for applying speed to war mobilization is clear. Rapid mobilization of men and material is, and will remain, a supreme weapon, and on it, eventually, we may have to depend for victory or defeat. Prussia in 1870 clearly demonstrated the value of speed in mobilization. Germany in 1914 amazed the world by a similar, if not more perfect, demonstration. Naturally, such mobilization plans have always been of the utmost importance in Europe. To us they have never seemed so necessary. It is hoped that the apparent fortunate absence of necessity which this country has enjoyed in the past, at least up to the World War, has not lulled us into a false sense of security in this respect.

Our procurement effort in the World War was an orgy of spending in human life and treasure, largely because we were not prepared. During 1918-19, the U. S. Army spent twenty-three billions of dollars, and the U. S. Navy three billions of dollars. Had good procurement plans been available at that time, such enormous expenditures would have been unnecessary. If good procurement plans are available in a future war, unnecessary material will not be furnished and necessary material will be supplied at a minimum of cost.

The real and final proof of the importance of procurement planning, if further proof is necessary, lies in the economic condition of the world today and the agitation going on at this time for a stabilization of conditions, fixing of prices and controlling of output, overproduction, and similar factors. In other words, the immediate future may witness the desirability and necessity of comprehensive peace-time industrial planning, as well as that of planning for war. The news of today clearly indicates this trend. The World War has been over for thirteen years, yet we are still suffering from the inherited economic failures of

that struggle, failures which are being repeated in present times of peace and will be multiplied a hundredfold if an emergency should come again.

In this connection, and visualizing world conditions as they exist today, the thought is insistent that the professional equipment of the future naval officer must include a well-grounded knowledge of economics if he is fully and adequately to meet his naval responsibilities. Economic boundaries no longer coincide with political boundaries, and this fact is significant. War is generally understood to be the cause of economic ills. Haven't we the cart before the horse? Is not our world-wide inability to adjust economic factors a real cause of war? If such a condition does contribute to the cause of war—and we believe it does—then, our obligation and duty is clear.

Properly developed material procurement plans consistent with a national industrial mobilization plan will recognize fundamental economic principles and will assure us adequate material readiness, at a minimum of effort and cost.

The need for an organization to study and make recommendations concerning planning for national defense was recognized in this country many years ago. George Washington in a letter to the President of Congress, dated August 20, 1780, sets forth the serious and all but fatal consequences of a lack of a real definite policy of defense during the Revolutionary War. Our next real war came in 1812.

The late General Upton, in his book titled *The Military Policy of the United States,* in summing up the conclusions as to the War of 1812, says: "Less than fifteen thousand men, for the period of two years, brought war and devastation into our territory, and successfully withstood the misapplied power of seven millions of people." "Misapplied power," here, clearly means lack of foresight, system, and planning.

In the meantime, years passed and the country expanded rapidly. The development of industry and, chiefly, the varied means of transportation and communication, together with the more rapid use of material due to new devices, introduced many untried factors into the scheme of war. In the last century, for instance, we find that subsistence of armed troops was largely a matter of living off the country. Compare that with our commissary arrangements of today. When Napoleon failed in his Russian campaign, it was procurement planning that failed and not his soldiers. Man power has always been comparatively easy to obtain. The big problem always has been, and will continue to be, how to sustain and equip it adequately.

Of course, industrial planning, as we know it today, was not recognized as such in these early struggles, and its necessity was not fully realized until after the Spanish-American War. That war was fought under such a poor procurement and planning basis that of 278,000 men called into the Army there were only 52,000 effectives able to leave the country. We all know, and many remember, the other shortcomings and tragic failures of that one-sided war. It may reasonably be asked: of what good are men and ships if they cannot be maintained?

Mr. Walter Melliss, in his recent book, *The Martial Spirit,* paints all too clearly the picture of how costly our negligence in the Spanish-American War proved to be. It definitely shows that the responsibility of the government does not end in expecting or requiring one to offer his life for his country. The obligation persists that such a one should be adequately subsisted, clothed, and continuously furnished with the necessary tools to wage successful warfare. Such assurances can only be obtained by prearrangement, and the obvious may be stated, that only by adequate prearrangement can victory be made immediate and decisive.

After the Spanish-American War, there developed an appreciation of the need for more planning for the conduct of war.

Mr. Elihu Root was active in this effort and was assisted by many senators who themselves had seen active service in the Civil and Spanish wars. The Army General Staff eventually resulted from this agitation, but many of the greater lessons of the war went unheeded. National defense in its broader aspects was to slumber for many years more.

The first definite recommendation for an agency to consider a policy of national defense, was made in H.R. 1309 and attendant House Report submitted by Mr. Hobson on April 22, 1912. The bill was designed to establish a council of national defense and had the unqualified approval of such officers and experts as Major General Leon-

ard Wood, Rear Admirals Richard Wainwright, R. P. Rodgers, and A. T. Mahan (Retired), and many others.

An extract from the Hobson report states:

> There is no choice. We must make adequate provision for defense. This cannot be done with efficiency and economy without a proper agency. This bill establishes such an agency without creating any new offices, and practically without entailing any additional expense. . . . The great weakness of our nation from a standpoint of national defense has been the want of a definite policy and the want of coöperation between the various agencies involved. This bill makes up for this weakness and will promote economy and efficiency in peace and increases the chances of victory in war.

This was in 1912. The bill was not passed and a splendid opportunity to promote national defense effectively and economically was neglected.

Apparently, the first definite official action ever taken in this country to create an organization having within its purview the question of national defense from a standpoint of industrial preparedness, was that taken by Secretary of the Navy Josephus Daniels in creating the "Naval Consulting Board of the United States." It is of interest to note that this board was created without benefit of legislation, having no legal status; that no appropriation was provided for expenses of the civilian members constituting the board; and that it was attached to the Office of the Secretary in an advisory capacity only. The organization meeting was held on October 7, 1915. This board was later recognized and legalized by Congress on August 29, 1916, by an appropriation of $50,000.[1]

One of the first constructive acts of the Naval Consulting Board was the "initiation of an intensive campaign for industrial preparedness," which was founded upon the experience of Mr. Howard E. Coffin with the standardization of the specifications and materials in the motor car industry. The aid of five engineering societies was enlisted to make a complete survey of the industrial facilities of the United States. The broad aim of the survey was to secure information as to the facilities of the country for the production of materials needed to carry on war. The work was carried on with surprising speed and tremendous enthusiasm, which was due to a paralleling educational campaign through the newspapers and local organizations and parades. The results of this dual campaign finally reached the halls of Congress and resulted in the passage of the act of August 29, 1916, which created the Council of National Defense, and an "advisory commission" consisting of seven civilians who served without compensation. A system of contacts through "committees of the industries" was worked out by the commissioner in charge of raw materials, and on March 3, 1917, the idea of a large organization was made effective.

The council had no administrative power. It was only advisory. It served primarily as a great laboratory devoted to discovering and making articulate the new administrative problems which the war was to evolve.

In February, 1917, the council created the munitions standards board and a month later the general munitions board. The purpose of these two boards was to control the war activities of industry by advisory measures and to act as an information agency for both the government and industry. It soon became apparent that these two boards were inadequate to coördinate industry, and the council on July 28, 1917, created, with the approval of the President, the war industries board and dissolved the two earlier boards.

The original purpose of the war industries board was to act as a clearing house for governmental war industry needs. The duties of the board, as originally organized, were perfunctory, and this new agency was practically abandoned during January and February, 1918, as it had no specific legal authority to coördinate industry. The passage of the Overman Act gave the President powers which enabled him to reorganize the board and assign to it duties and powers of vast importance. The essence of this reorganized board was centralization of control and decentralization of execution, supported by the authority given the President by the Overman Act. (The Overman Act, passed on May 20, 1918, was repealed shortly after the armistice.)

The history of the war industries board is worthy of detailed study, as it demonstrates conclusively the state of unpreparedness of this country in the World War, and

[1] The National Defense Act was passed on June 3, 1916, and subsequently frequently amended, but it was essentially a measure of reorganization of the War Department.

it also indicates very forcibly the requirements which must be met in effectively mobilizing the nation for war.

The Council of National Defense continued to act in an advisory capacity during the war and until 1920. The total expenses of the council from the date of its organization meeting on December 11, 1916, to June 30, 1920, were $1,743,513.86, part of which was used by the war industries board and the national research council. This was during a period when a large organization was made necessary by the World War.

The contemplated size of the peace-time staff of the council was comparatively small. Had it been actively continued, there would undoubtedly have been full opportunity to have digested all the lessons of the World War and to have developed a comprehensive plan of national industrial mobilization.

In 1920, Secretary of War Baker, as chairman of the Council of National Defense, made a request for an appropriation of $145,291.31 (House Document 891, 66th Congress, 3d Session) to carry on this contemplated work. The Congress failed to appropriate the money to further this extremely important work and all records of the council, the war industries board and all other similar war-time activities were transferred to the office of the Assistant Secretary of War in compliance with executive order dated April 21, 1921 (No. 3439) and War Department memorandum dated May 16, 1921.

During 1920, extensive hearings were held by the House Select Committee on War Department Expenditures. This committee investigated the war time activities of the war industries board and the Army ordnance, aviation, cantonment construction, and other activities. These hearings brought out in minute detail the confusion, loss of life and time, and waste of effort which resulted from lack of a definite policy of national defense and want of coöperation between the various governmental departments and industry. These hearings were available to the Congress and would appear to be most convincing as to the need for such an organization as the Council of National Defense. The conditions reported were merely those of previous wars, except that the amplitude of confusion and inefficiency was materially increased, as it seems to be in each successive war, due to the progressively greater scale on which military and naval operations are conducted and the growing extent to which industrial, commercial, and financial activities are involved—in a word, the increasingly complicated conditions of national existence.

Sporadic attempts have been made to put a similar council in operation again. Congress, however, has given the subject no further consideration, and the original law remains on the statute books. The only activity of the council, at present, consists of an annual report to Congress to the effect that no appropriation has been made to further its work. In 1926, three bills, H.R. 10243, H.R. 10982, and H.R. 10985, were considered by the House Military Affairs Committee. Secretary of War Davis, Assistant Secretary of War MacNider, Secretary of the Navy Wilbur, and Brigadier General H. A. Drum appeared before this committee and submitted oral and written testimony. The three bills did not consider the council as at present organized, but contemplated the organization of a new council.

At the time of these hearings, additional hearings were being held by the Senate Military Affairs Committee on S. 1620, a bill introduced by Senator Capper of Kansas, which was the forerunner of the Capper-Johnson bill and was somewhat similar in construction to the Overman Act. The same questions of drafting of man power, price-fixing, and control of labor and industry were considered then that were considered by the war policies commission of this year, although not in as great detail. (The war policies commission will be discussed later.) Mr. Baruch (director of war industry in the World War) appeared before the Senate Committee in 1926, and also before the war policies commission this year. His testimony in each case was substantially the same.

The Army's "General Industrial Mobilization Plan, Basic Plan, 1925" (a plan designed to control industry in war) was presented to the Senate Military Affairs Committee and introduced into the record by General Ely, who at the time was commandant of the Army War College. This 1925 plan, undertaken by the Army as a result of their interpretation of sec. V(a) of the national defense act, was the result of a careful and detailed study made by a com-

mittee at the Army War College, of which Major Dan. I. Sultan was chairman. The work done by this committee has undoubtedly been reflected in all subsequent plans of the War Department. The 1925 plan contained many excellent features, one of which was the proposed use of representatives from many government departments. The plan introduced this year before the war policies commission by the War Department is defective in this respect. It is believed that the 1925 plan contains much merit and is deserving of considerable attention.

The War Department has continued the development of its industrial and procurement planning and is today well along with its efforts. Its detailed procurement plans concern only army needs, however, and do not reflect in any way the plans of other departments. Plans of other departments are naturally matters for their own direct control. Such surveys or studies of national scope as have been made by the War Department are designed to assure facility of supply for the Army.

Mr. Coffin, when he appeared before the war policies commission this year, recommended that the Council of National Defense be put in operation, but did not stress the point, as he apparently was not very hopeful that anything constructive could be accomplished at this time. His attitude was justified to a certain extent when the fact is taken into consideration that he and many other exceptionally well-qualified civilians have appeared before congressional committees on numerous previous occasions and have made recommendations without avail.

In addition to the legislative activities in 1926 for a council of national defense, there have been many bills considered which would reassign the powers of the Overman Act to the President in time of war. Some of them were proposed amendments to the Constitution. This form of legislation is given the support of the American Legion and the Veterans of Foreign Wars, and has been introduced in Congress yearly since 1920. The Capper-Johnson bill is a typical example of this form of legislation. It is similar to the Defense of the Realm Act now effective in Great Britain. The House Committee on Military Affairs held hearings on three bills of this nature H.R. 194, H.R. 4841, H.R. 8111, and H.J. Res. 128, in March, 1924, and on three more, H.R. 8313 (Capper-Johnson bill), H.R. 455, and H.R. 8329, in May, 1928.

It would appear that this form of legislation has been given more thought and effort by the public than has the Council of National Defense or any other form of "prearrangement" for war, as the majority of civilians are not aware of the need of national industrial mobilization plans. They apparently believe that a bill similar to the ones above listed would be the magic formula required to effect efficient mobilization and prosecution of war, and to equalize its burdens.

The above indicated activities of the American Legion and certain congressmen have resulted in the so-called war policies commission, created by H.J. Res. 98, 71st Congress (1930-31), and previously referred to in this paper. This commission is still active and consists of fourteen members—six from the Cabinet, four from the Senate, and four from the House of Representatives. It was "created to study and consider amending the Constitution of the United States to provide that private property may be taken by Congress for public use during war and methods of equalizing the burdens and to remove the profits of war, together with a study of policies to be pursued in event of war." Labor organizations have been active, also, as they fear that a movement is on foot to militarize labor and industry in the next war. This activity is evidenced in the provision of the above resolution that the drafting of labor would not be considered by the commission. The final report of this commission is due in Congress on December 7, 1931. Its conclusions should be of considerable interest.

The annual report of the Secretary of War, 1930, contains a national mobilization plan which was developed in the office of the chief coördinator and which assigns all war-time governmental activities to the various departmental organizations. Further, it proposes to utilize more fully the services of the Vice-President in directing, for the President, what might be termed the material side of war. It does not consider certain major and essential organizations at all, and, although it may have many desirable features, it is considered less desirable than the present War Department plan. It is believed that Mr. Baruch has a definite plan, also, but, as he has been in intimate

contact with the planning agencies of the War Department for many years, it is probable that many of his principal ideas have been adopted by them.

It is submitted that what is really needed (in an ideal sense) is a national industrial and procurement plan designed to include the activities of every department of the government. The apparent hopelessness of accomplishment should not blind us to the need of such a plan or prevent our considering it. Such a plan will be difficult, if not impossible, to develop at the present time, due to the lack of inclination of departments other than War and Navy to talk preparedness. In the meantime, it is quite possible that we will drift, and thus largely justify what Clemenceau once said of us:

> The Americans make fine soldiers. But their military preparedness was, and will always remain, insufficient to make them a decisive factor to be reckoned with at the psychological moment in case of war.

In the absence of any such national plan as indicated above, it is of interest to know that the War Department has recently submitted (1931) to the war policies commission an industrial mobilization plan. The complete plan or proposal consists of two parts—first, the establishment of an "industrial body, which, under the supervision of the President, is intended to coördinate and control the industrial activities of the nation"; and second, the establishment of definite plans for the "organization of the staff and operating agencies within the War Department that will be responsible for the actual procurement of finished items." The first part is, in reality, a brief organizational outline of policy. In it is found the proposed organization of the President's industrial staff, or super-agency. The second part (except the appendices and certain contributory features) is the detailed war organization of the War Department intended to be similar to and consistent with the super-plan. It is an organizational plan such as any department of the government might evolve for a similar purpose.

It is of further interest to recall that, at the first meeting (1922) of the Army and Navy Munitions Board, a suggestion was made that a board of mobilization of industries be appointed as a sub-committee of the munitions board. The idea was never developed and no further interest was taken in the matter. As originally organized, the munitions board was intended to adjust allocations of facilities between the Army and Navy and to draw up legislative programs concerning procurement. Practically, it became known as a mere allocations agency, although, even in that sphere, its accomplishments were most limited. In more ways than one, therefore, the present seems an appropriate time to utilize more fully the Army and Navy Munitions Board for studies of industrial planning.

The Army and Navy Munitions Board has been reorganized recently. The board consists of the Assistant Secretary of War and the Assistant Secretary of the Navy. Assisting the board is an executive committee, consisting of two officers from the Army and Navy respectively.

Perhaps the outstanding feature of the munitions board, as at present organized, is the standardization of its committees and sub-committees along lines similar to those of the war organization of the office of the Assistant Secretary of War, and also to those of the coördinator of requirements (civilian munitions board) to be established under the director of war industry, as proposed in the industrial plan. The effectiveness of being able to amalgamate promptly these correlated agencies when war is declared must be at once evident.

An existing agreement of the two services to continue the development of the plan jointly adds considerable strength to whatever plan is eventually proposed. No other agency or department can or will undertake the work until the need for them to do so is definitely demonstrated. As such a plan is too vital to national defense to be neglected, the War and Navy Departments are the obvious agencies to continue the studies.

Naval procurement planning has one main task, viz.: to further national defense, or, in other words, readiness "to win the war." In this respect, naval officers cannot evade their equal responsibility with the Army in the development of all factors of national defense, which includes the determination and prearrangement of material needs and industrial preparedness. In keeping with the accomplishment of this objective, persistent and hearty coöperation and coördination with the War Department is not only desirable—it is mandatory.

In such joint efforts, the Army and Navy have been well likened to a pair of shears. The sharp-cutting edges represent the combatant arms; economic resources and their proper use remain the power behind the shears. The cutting edges are not of much use unless first, the two blades are properly pivoted together, and second, power is applied.

Naval procurement, in a material sense, can be accomplished if we can determine: (a) What we need (listed by items and broken down into raw materials); (b) when we need it (time factor); (c) where we will need it (location of ports and bases, transportation studies); and (d) who is to furnish it to us (allocation of facilities).

Our entire effort in procurement planning revolves around these four efforts. The first three, (a), (b), and (c), are definitely the responsibility of the naval service. The fourth is largely the responsibility of a coordinating body, viz., the Army and Navy Munitions Board.

In the War Department, procurement planning is vested in the office of the Assistant Secretary of War. The War Department system of procurement planning is on the basis of fourteen procurement districts, each an entity in itself. The procurement load is distributed to these districts. The Army procurement is, therefore, decentralized and in this respect differs radically with the Navy, in that ours is largely centralized in the Bureau of Supplies and Accounts. The army organization is purposely developed with the idea of instantly fitting into the civilian super-organization designed to direct war industry. While the navy system of planning has no connection with any proposed super-organization, our efforts are not inconsistent with it, and an entirely satisfactory contact is provided by the reorganized munitions board, which, as has been stated before, places responsibility on the Navy Department as well as the War Department for whatever features any revised superplan may possess.

Summarizing, it is believed:

(1) That a study of the industrial mobilization plan submitted by the War Department to the war policies commission will show it to be the best plan yet produced, and that it is, therefore, worthy of careful investigation and further development.

(2) That, fully recognizing the excellence of the present army plan, it would seem that a broader outline and survey of interdepartmental relations would be appropriate. Such an effort should not, necessarily, take the form of a detailed plan, but should be designed to clarify existing interdependencies.

(3) That, as the Council of National Defense is an existing agency composed of government officials and designed to promote planning for national defense, and as it needs only a small congressional appropriation for its revival and administration, its use should be continued.

(4) That, in view of the great value of the Naval Consulting Board in time of war, its organization should be maintained and used in time of peace.

(5) That the Army and Navy Munitions Board, as at present constituted, amply fulfills the needs for such a coördinative body and should be continued and fully utilized.

(6) That apathy concerning adequate industrial mobilization plans is not confined to the military and naval services, but is much more prevalent in civil life. Such apathy is largely due to ignorance of what is being attempted. The best efforts of the War and Navy Departments should be exerted to overcome this apathy in order to provide an adequate plan and to prevent adverse repercussions in an emergency.

(7) That national defense of our country is of paramount interest to the Army and Navy; that it will never be efficiently planned or conducted without continued cooperation and coördination. Material planning demands full use of these elements. Only officers capable of appreciating and wholeheartedly utilizing such aids to efficient administration should be chosen for the work.

(8) That the determination of the Navy's material war-time needs should be assigned priority second only to the operation, training, and upkeep of the forces afloat.

(9) That the development of an adequate industrial plan is designed to and would promote peace; it tends to equalize the burdens of and remove the profits of war.

(10) That studies designed to assure adequate provision for mobilization of industry in an emergency are also of value in planning to stabilize peace-time economic conditions.

(11) That the general subject of procurement planning is one deserving the best thought and attention of the naval service.

FOR THE HONOR OF THE FLAG

By Rear Admiral Elliot Snow (C.C.), U. S. Navy (Retired)

NOT long ago a lot of old, but well written, manuscripts called "Reminiscences of the Old Navy" came into my possession. Of these narratives, one called "Maintaining the Honor of the Flag," first attracted my attention, and upon commencing to read it, my eye caught these words:

Commander Richard P. Leary, U.S.N., while in command of the *Adams* at Apia Harbor, Samoa, during the year 1888, had an exciting experience in connection with the German man-of-war *Adler*.

What a flood of memories rushed into mind, upon finding there recited an incident which had its inception whilst I, then a midshipman on my "two years' cruise," was acting as officer-of-the-deck of the U. S. Sloop-of-War *Adams* one memorable day in Apia, Samoa, about the middle of November, 1888. The author of the manuscript[1] recorded that day's incident so graphically and accurately, and depicted so well the shaking of the mailed fist of Germany at the United States, thirty years before the World War, that his account is worthy of being quoted in full.

The relations between the commanding officers of the two ships *Adams* and *Adler*, which were about equally matched in point of strength, had been strained for some time, the intensity of feeling culminating on November 15, when the German commander ordered the natives to vacate a point on shore which was under American protection, or failing to comply, he would use the battery of his vessel to enforce his commands. Hearing of the German officer's action, Commander Leary watched every move made by that vessel, quietly making preparations to get under way at a moment's notice. Steam was ordered and obtained without attracting attention of the *Adler's* officers, who expected to have the advantage in getting under way from the fact that it was understood the *Adams'* boilers were being cleaned. Such was the case, and live coals were transferred from the galley range to the furnaces until steam was well in hand, without exciting the suspicions of their wily neighbor. All hands were kept at their stations, and just before dawn the *Adler* began to heave short.

On board the *Adams* precautions had been taken to muffle the cable, and the barred links came in the hawse pipes noiselessly, without an indication of bustle or jar reaching the ears of those on the *Adler*. Prompt to the sound of the engine-room gong, the German cruiser steamed ahead, gathering headway as the anchor was catted and secured, pointing directly for the entrance of the harbor; and the *Adams*, as if suddenly endowed with life and motion, glided through the water with ripples breaking and gurgling around the sharp stem.

It was a genuine surprise to the officers of the rival ship to find their adversary very much on the alert and fully alive to the importance of the game being played. But the start had been made, and there was no disposition manifested by either vessel to evade the issue, whatever it might be. The *Adams* with a sheer of the helm took the inshore position, and as the bows dipped into the long swells of the mighty Pacific the command to "Clear decks for action" was quietly passed forward.

Numerous dark forms stole forth from the shadows into the uncertain starlight, all intent upon the grim work they might be speedily engaged in. Guns were cast loose, ammunition provided, small arms placed at hand, awning stanchions unshipped, while the marines fell in at their stations with accouterments that gleamed in the soft haze and gorgeous roseate hues beginning to tint and illumine the eastern horizon.

The German ship lost no time following the example set her by the American cruiser. They were evidently looking for a fight, and were deliberate and careful in every movement that was made. Side by side the two vessels steamed with each crew at quarters, standing grim and silent by their respective guns, every moment becoming more distinct as the wavering colors flashed and radiated along the glowing horizon.

Reaching the threatened spot, both vessels dropped their anchors, Captain Leary's position being such that in the event of the German cruiser opening fire the projectiles would pass directly over the deck of the *Adams*. The German officers visited the shore, and Captain Leary utilized the opportunity to send a note of warning, couched in courteous terms, to the German commander, stating briefly that it was to be hoped the friendly relations existing between the respective governments which they represented would not suffer through rashness, or by the committal of a hostile step; that he understood American interests were in danger of molestation, and that in such an event he should protect the same.

For hours the crews of the two vessels remained facing each other, but finally the tension was relieved by the *Adler* getting under way about noon, steaming slowly seaward, followed by the *Adams*. The harbor of Apia was again reached,

[1] The late Captain Horatio D. Smith, U.S.R.C.S.

the two ships resumed their former anchorages, and the incident passed without a shot having been fired.

Before passing to some other incidents which preceded and followed this never-to-be-forgotten day, the first in my brief career on which the vessels of two nations were cleared for hostile action, the writer here wishes to bear his personal testimony to the accuracy of this narrative in all but one minor particular. When he (perhaps upon report of the quartermaster on watch) observed shortly after dawn that the *Adler* was making preparations to get under way and received orders "to call all hands and heave short," there was no attempt made to muffle the noise made by the cable in coming in through the hawse pipe and passing around the whelps of the wildcat.

All day long the two ships rode to their anchors within three or four ship's-lengths of one another. The position was well taken, in so far as the *Adams* was concerned, because with the exception of an 8-inch gun in the waist, converted from an old-time 11-inch Parrott gun, her battery consisted of old-fashioned, smooth-bore, muzzle-loading guns and two obsolete Hotchkiss revolving cannon, whereas the *Adler* had a modern battery of rapid fire guns, both in the main and secondary batteries. Our only hope was to lie close to the *Adler* so that the action, had one taken place, would have been decided practically upon who delivered the first broadside. *We were ready.*

H.M.S. *Lizard* steamed out with us, for what purpose I never learned. However, as time has run its course, and I have learned more about the real family feeling that has existed between ourselves and Great Britain (since the War of 1812 cleared out the ill feeling between the British Lion and her lusty Cub) whenever menaced by an *outsider,* I have had the growing belief that the action of the commander of the British gunboat was but one more evidence of the oft repeated saying "Blood is thicker than water."[2]

The maneuver, just described, was repeated upon a second occasion, not mention by Captain Smith, because his story did not purport to deal with the whole Samoan controversy. A few days following the incident just described, the *Adams* got under way early one morning and was followed by the *Adler.* The latter vessel took a position so far out from us that our smooth bore guns were to all intents and purposes outranged, and our vessel probably would have been sunk at long range if an engagement had occurred.

The whole trouble at Samoa, which gave rise to this and other striking incidents, arose because of Bismarck's policy of colonial expansion. The head and manager of the *Deutsches Handels und Plantagen Gesellschaft der Sud See* in Samoa was a Herr Weber. The rightful king of Samoa was Malietoa; but, to further her colonial aspirations in that quarter of the globe, the German consul, Herr Brandeis,[3] espoused the cause of a lesser chief, Tamasese, and acting through Herr Weber, oppressed the natives to such an extent that Malietoa took up arms against the upstart Tamasese.

Upon the unwarranted demand of the German government, backed up by a strong naval force consisting of the German flagship *Bismarck,* the *Olga, Carola, Sophie, Adler,* and *Eber,* Malietoa, on account of his great love for his country and affection for his people, gave himself up and was deported, whereupon Mataafa was chosen by the loyal Samoans to succeed him. The declaration of war issued by Germany against the Samoan Islands was issued on January 19, 1887, by the then German Consul, Herr Knapp, in the following terms.

By order of the Imperial German Government I herewith proclaim the state of war for the Samoan Islands. Any assistance to the rebels will be punished by Martial Law irrespective of any nationality. The introduction of contraband of war is prohibited. All vessels and boats are liable to be searched by the German authorities.

The police of Apia henceforth will act under instructions from the Imperial German Government. The residents of Apia are requested to assist in keeping law and order.

In a document in the German *White Book* dated February 2, 1887, addressed to Admiral Baron von der Glotz, chief of the German Admiralty, the cloven hoof of Germany was discernible. It said (as if anyone would swallow such a preposterous

[2] This expression was first used by Josiah Tattnall, our flag-officer on the China Station, in 1858, when the British fleet was hard beset before the Pei-Ho forts. On that occasion, during the brief interval that Commodore Tatnall was aboard H.M.S. *Cormorant,* in consultation with Admiral Hope, some of the Yankee sailors, who had rowed our flag officer there, helped man one of the *Cormorant's* guns.

[3] Herr Brandeis acted also as Tamasese's premier.

statement) in the face of the declaration of war just quoted:

Germany is not at war with Samoa, as the term is understood by international law, but she regards Tamasese as the rightful ruler and Mataafa as a rebel, against whom and his followers retaliation must be enforced. Anyone standing by them is a promoter of the conflict between them and the Germans and must take the consequences.

The way the rightful ruler of Samoa felt about the whole proceeding is disclosed in a heartbreaking farewell to his Samoan subjects, written in the bush near Apia, saying:

To all Samoa: On account of my great love to my country and my great affection to all Samoa, this is the reason that I deliver up my body to the German Government. That Government may do as they wish to me. The reason of this is because I do not desire that again the blood of Samoa shall be spilt for me. But I do not know what is my offense which has caused their anger to me and my country—Tuamasya, farewell! Monono and family, farewell! so, also, Salafai, Tutuila, Aana and Atua, farewell. If we do not again see one another in this world, pray that we may be again together above. May you be blessed.

MALIETOA, *The King*

In the bush near Apia.

Malietoa realized his position was hopeless and also recorded the situation in a letter written from Saanapa (in the bush) to the U. S. Consul General, Harold M. Sewell, on September 18, 1887.

His Highness, H. M. Sewell, United States Consul-General: I, Malietoa, the king of Samoa, write this letter to you because I am now in great distress on account of Tamasese and other chiefs. When they commenced these troubles my desire, indeed, was to punish them and put an end to the rebellion which they had raised, but I yielded to the advice of the British and American Consuls, for assistance and protection was offered to me and my Government if I would not do anything that would cause war in my country. Relying upon those directions, I did not put down the rebellion.

Now war has been raised against me by the Emperor of Germany and they have made Tamasese king of Samoa. German forces and the adherents of Tamasese threaten to make war on all my people who do not acknowledge Tamasese as king. I do not know what wrongful act I have done, and do hereby protest against the action done by Germany. But the German Government is strong and I, indeed, am weak, and therefore I yield to their strength that my people may live and not be slaughtered. I shall now obey and put myself tomorrow in the hands of the German forces, to prevent the blood of my people being spilt and because of my love for my country. I desire to remind you of the promises so frequently made by your government and trust that you will cause these assurances to come to pass, in order to cause the lives and liberties of my chiefs and people to be respected.

I desire to make known to you this: I fear, indeed, that Germany will desire to compel me as they are now making my people, to sign papers acknowledging Tamasese as king. If I write my name on paper it will be under compulsion, and to avoid war being made upon my people by the German forces. May you live. I am,

MALIETOA, *King of Samoa*

On December 5, 1888, the U.S.S. *Adams* was relieved from duty in Samoa by the U.S.S. *Nipsic* and left Apia with a homeward bound pennant flying. Upon her arrival in Honolulu little else was talked about except affairs in "The Soft Sea Islands." On March 13 or 14, Western time, (Samoa kept Eastern time), the Pacific Squadron, consisting of the ill-fated *Trenton* and *Vandalia*, under the flag of Rear Admiral Lewis A. Kimberly, U. S. Navy, arrived in Samoa.

The center of the great hurricane of March 16 and 17, 1889, passed directly over Apia, putting an end for the time being to a very tense international situation.

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A NAVY SO PERMEATED *cannot fail during peace to persist in the face of every difficulty to prepare itself for war, physically, mentally, and morally. When war breaks out it will embark upon the campaign, not merely with enthusiastic patriotic fervor, which our own history has shown time and time again will cool rapidly under the test of real hardship, but with an inflamed spirit which will be sustained in spite of whatever danger, privation, and suffering may be encountered. Our officers and men will then go into battle with irresistible fanaticism, yet with nerves and muscles under such control as to ensure precision of thinking, loading, pointing, sight setting, range finding, spotting, plotting, position keeping, and all other operations essential to efficient fighting. Determination to win will endure, in spite of ghastly casualties, until victory is attained.**—KNOX

**See filler on page 1615.*

HOW THE AMERICAN NAVY BROUGHT SANTA CLAUS TO FRANCE

By Lieutenant (J.G.) Winston Folk, U. S. Navy

ANOTHER Christmas approaches. This year, despite the fact that the depths of the depression already seem to have been plumbed, Christmas will be a lean one for many children. It will be a lean one for many adults, too, of course, but I say children because Christmas Day is so very much children's day of days. Charitable organizations, of course, will do what they can towards bringing at least a ray of sunshine into the lives of those dependent on them. And in the van will be the U. S. Navy and the "Christmas Ship." We are indebted to Admiral Rodman's article, "The Christmas Ship" (Naval Institute Proceedings, July, 1931), for disclosing the origin of the custom, and for giving proper credit to those who originated it and when —the bluejackets of the U.S.S. *New York* in December, 1915. Admiral Rodman expressed the hope that the "Christmas Ship" idea would become the custom throughout all the ships of the Navy and that it would continue as one of the Navy's most cherished traditions. This, I think, after only sixteen years, is already the case.

The following is an account of how the custom worked out in practice in a foreign land a few years ago when the title "U. S. Naval Forces, Europe," was something more than a delightful memory.

On December 22, after a long stay in the shadow of the rock of Gibraltar, the U.S.S. *Toucey*, commanded by Commander W. C. I. Stiles, and her running mate, the U.S.S. *Breck*, commanded by Lieutenant Commander John Magruder, arrived in Marseilles. In the manner so often employed in European cities' crowded harbors, the two destroyers were moored alongside each other, anchored by the bow and moored by the stern to the dock. A float extended out from the dock alongside the *Toucey*. The *Toucey's* accommodation ladder was put over the side at one end and at the other end, a ladder led from the float to the Quai des Belges which, at that point, terminated Marseilles' famous Rue de Cannebiere.

Prior to reaching Marseilles, the question of the usual navy Christmas party had been taken up and the bluejackets had decided, as did those on the original Christmas ship in Scotland in 1917, that children are children and that the Christmas party must be given. Consequently, as soon as the customary exchanges of official calls with the various Marseillaise dignitaries had been made, the plans for the Christmas party were put into execution. It was decided that the *Breck* would ask boys and the *Toucey* girls, so twenty-five little orphan boys, sons of sailors lost at sea, were invited to the *Breck*, and twenty-five little orphan girls were invited to the *Toucey* for Christmas dinner. The ages of the youngsters ranged from six to twelve.

Christmas Eve was spent in decorating the ships. Signal flags were strung artistically—more or less—in prominent places; bunting was draped here and there; branches of evergreens were lashed to the tops of the masts, the ends of the yardarms and the tops of the jack staffs and flagstaffs. Just over the gangway there was secured a large and unmistakable bunch of mistletoe with which, according to the magazine *Judge*, there used to be connected a quaint old custom. The wardrooms, chief petty officers' quarters, and the crews' compartments of the two ships were decked out in holiday attire, too, with the usual Christmas trimmings, red and green. By liberty call all decorating was completed, and soon after the early darkness of December blotted from sight all decorative efforts except those of an electrical nature. All lights of the two ships were turned on, including running, blinker, and searchlights. On the *Breck*, the electricians rigged up some extra illumination, and high on the *Breck's* fore-

mast an electric symbol of the Star of Bethlehem blazed, golden against the black velvet of the night.

A graceful gesture towards France was made by showing the colors of France and America in conjunction with one another. On the *Breck*, floating to the evening breeze and standing forth in the bright rays of the *Toucey's* searchlight was the *Tricouleur* of France. Then, on the *Toucey*, catching, not the "gleam of the morning's first beam," but the gleams from the *Breck's* searchlight, were the American colors.

On the mainmast of each ship a red light flashed, in groups of two flashes. To the French people congregated on the *quai* to see the American ships, the red lights were but additional items of the show, which indeed they were; but to the naval personnel, knowing the real nature of the lights, it was somewhat startling to see two ships moored to the dock and to each other, steaming, according to the speed lights, at full speed astern!

On Christmas day, from "turn to" till the arrival of the guests, the ships' companies were busy with the remaining preparations. In the ships' galleys, all was organized bustle, and in their vicinity, a delicious aroma of roasted turkeys and baked hams filled the air. Towards noon, sweepers were piped for a final "clean sweep down, fore 'n' aft." The stage was set for the appearance of the juvenile stars.

The *Breck's* little boys arrived first. As eight bells, noon, were struck, they came into sight, marching down the dock in military formation despite the fact that they had some difficulty in making their way through the large crowd that was ship-gazing from the *quai*. They had to board the *Toucey* first, and as each miniature bluejacket came over the side, he turned towards the colors and briskly, smartly, trimly rendered the customary salute. The "Navy juniors" crossed over to the *Breck*, saluted again, and then were carried away on the shoulders of the *Breck* sailors.

Our little girl friends arrived a few minutes later. (I saw "our" because I was on the *Toucey*, and from now on I shall confine my account of the Christmas party to the *Toucey* phase of it.) All of the girls were dressed alike in blue serge dresses, black shoes and stockings, and broad brimmed brown hats. They were accompanied by two nuns whose faces plainly indicated that they were not quite sure whether attending the affair was the proper thing to do or not. By the time they had arrived abreast the destroyers, they had probably decided in favor of the negative, for the bluejackets at that point sent out cheers for the visitors. Not so, however, with the nuns' little charges, for most of them were eager-eyed and seemed greatly thrilled over what, to them, was a real adventure, and they answered the bluejackets' cheers with waves of hands. There were two or three "teetiners," though, for whom the cheers of the sailors, the strange environment, and the unaccustomed excitement in general were too much, and by the time they had got aboard they had started to cry. The two Sisters of Charity were greatly distressed and considerably flustered by this unfortunate contingency, but several bluejackets stepped forward and applied for the job of soothing the tearful ones. I remember one bluejacket in particular. Gently, but firmly he pried one of the timid girls away from the sister to whom she was clinging, at the same time saying to the uncomprehending nun, "Here, let me have this one, and if I don't have a grin on that face in two minutes my name ain't McCaffery." If the nun did not understand the sailor's words, she easily recognized his meaning and she allowed the little orphan to be taken away. Nor was McCaffery unable to prove his name, for in less than the self-allotted two minutes, he was leading about the ship a willing little miss in whose face, lighted with a smile, there mingled wonder, joy, and delight at the peculiar individual who was so attentive to her. Likewise the others were chosen by their beaux and taken down to dinner—five to the chief petty officers quarters, ten and a nun to the forward compartment, and ten and the other nun to the after compartment.

About twenty minutes later I went down in the forward compartment to see how our guests were getting along. I was greeted with one of those sights that cause little chills to chase one another up and down one's spinal column and cause one to be uncertain whether to laugh or cry. At the table were the nun, ten of *les petite orphelines* and some forty bluejackets. Each little girl was firmly seated on the knees of a happy, grinning bluejacket who had forgotten his own dinner in his delight at the way his protégée surrounded food with herself.

"Gee," said one of the men, "I never got such a kick outa anything in my life as I'm gettin' outa this." All of the girls were literally up to their ears in turkey, ham, mashed potatoes and gravy, sweet potatoes, peas, pickle, and oh, all the usual trimmings that go with Christmas dinner. The bluejackets saw to it that their guests' plates never even approached emptiness. Every now and then a little girl would turn a pair of sparkling eyes on her self-appointed protector and laugh at something he had said. But before she herself could say anything, she was back in the plate of food again. Consequently, the sailors did most of the talking, the fact mattering not at all that none of the girls understood English. Nor did any of the men know French. But, somehow, hosts and guests got along splendidly. Though they did not comprehend the words, they understood the tune.

When the nun saw me she came over to speak to me. All misgivings were gone from her face, and instead there were written on it happiness and thankfulness. She fired a salvo of French at me that scored a few direct hits and two or three ricochets. I gathered that she was trying to thank me. I tried to tell her that I was not the one to thank, but that made no difference. She had something to thank somebody for, and if that somebody were not around, then there must be a substitute. I was the substitute and so she thanked me. Her thanks were given in whirlwind French and as well as I was able to understand her, she was saying that she did not see why we were giving the party, but that she was profoundly grateful.

The scene in that compartment was worthy of the brush of a genius, or the pen of a great descriptive writer or poet. What a picture of that scene could a Victor Hugo have painted in words! What a picture of it could a Raphael have put on canvas!

A small living compartment on an American destroyer; bunks in tiers of three, neatly made up and secured, partially hidden behind the decorations of flags, bunting, branches of evergreen, and streamers of Christmas red and green. Bare wooden tables, where they are not covered with platters, dishes and accessories, gleam white from diligent scrubbing. Broad ribbons of universal gold slip in through the ports, putting golden bands along the deck, or wrapping them around stanchions. Seated around the tables are some forty American bluejackets in "liberty blues"; a French nun of the Roman Catholic faith, her fine face flushed with the fever of unwonted joyous excitement; and ten little French orphan girls in blue serge dresses enthroned on the knees of ten sailors. Pretty little girls they are, too, and healthy, with red lips, white even teeth, rosy cheeks, and for the most part, flashing black eyes and dark hair, though two or three have blue eyes and fair hair. In direct contrast to them are the sailormen with their weather-beaten faces and voices more accustomed to yelling above the wind, the sea, and ship noises, or to "ragging" each other than to talking with children. More at home manning a gun, a throttle, a deck scrubber, or guzzling "jamoke" on night watches than to feeding little girls. But the spirit of Christmas has caught them. There is a tender look on their faces and a soft note in their voices as they fall into that spirit which is personified by the charming little guests.

As I turned and climbed the ladder, the last lines of Bayard Taylor's "Song in Camp" came to me:

> The bravest are the tenderest,—
> The loving are the daring.

Even orphan asylum children have a limit as to the amount of food they can hold, and with the last available space for stowing edibles filled in, dinner came to a deferred and stuffed end. The party, however, was by no means over, for there remained the distribution of gifts.

A Santa Claus outfit had been bought in order to have everything as much like Christmas as possible. There was some debate at first as to whether or not there should be a Santa Claus. The French children have a Father Christmas, but he is not the definite person that Santa Claus is to American children. Above all, *Père Noël* does not distribute gifts from a superabundant store as does Santa Claus, nor in fact, is Christmas a gift-giving day in France, anyway. New Year's Day is the time when presents are given and received. Christmas to the French is more what it was intended to be originally—Christ's birthday. The American consul, Mr. Frost, however, said to go ahead and have a Santa Claus. It would enhance the color of the party, and if the French children thought the old gentleman in their midst was St.

Peter, what difference made it? So Santa Claus won, and an officer was selected for the honor of impersonating that august monarch of childhood.

There was a tree, too. A huge one, ten-feet high, and its decorations were such that it easily could have been the origin of the expression "all dressed up like a Christmas tree." The tree was on the forecastle and there were assembled around it the bluejackets and their guests and the officers and their guests (three wives, two children, and Mr. and Mrs. American Consul). Suddenly a shout went up. Santa Claus had arrived. Santa Claus made his way to a point beside the tree and made a speech partly in English and partly in amazing French. When the speech was finished, despite the fact that they had understood but little of it, the sailors let out a huge yell of approval. The little girls, despite the fact that they had not understood *any* of it, caught on and applauded vigorously.

Then, the presents. Santa Claus reached into the pile of gifts and picked out a bundle. With much éclat he read out the name on the tissue-papered, red-ribboned package: "Mademoiselle Madeline Médan," and Madeline, aged six, shyly stepped forward to receive her present—a dark blue sweater. (It has been ascertained previously that such a sweater would be considered regulation at the strict *orphinelat.*) Madeline's hands were already filled with trinkets given to her by the bodyguard of bluejackets who had attached themselves to her, but somehow she managed to take care of the addition. (Every sailor and every chief petty officer had attached himself to one of the twenty-five girls. The distribution was about even and there was a great deal of good natured rivalry to see which court could give its lady fair the most.)

Another name was read out. This time, from the tissue paper so quickly and eagerly torn off, there emerged a doll. As instinctively as one rubs one's fingers over an invitation to see if it is engraved, the little girl turned the doll horizontal to see if it would close its eyes. To her infinite delight, it did.

The white, red streaked pile at the foot of the tree rapidly grew smaller. Soon there was nothing of it left at all, and each little girl was the proud possessor of a sweater, a doll, and a box of candy, all given her by Santa Claus. Nor did Santa Claus forget the two nuns. I doubt if all the girls put together were as thrilled as those two Sisters of Charity were when, to their obvious surprise, their names were called out. When they opened their parcels and discovered several linen handkerchiefs, their years of self-discipline were of no avail to prevent their showing how deeply they were affected. Unable to speak, they bowed their thanks to Santa Claus, to the officers, and to the bluejackets as tears of grateful emotion streaked their cheeks.

After the distribution of the presents, pictures were taken. Then Santa Claus made a farewell speech, and disappeared for another year, though three-year-old Mary, daughter of the paymaster, never did receive a satisfactory answer as to how Santa Claus's boots got into Lieutenant Olsen's room!

The little girls had an act of their own to perform, so, not without some difficulty, the nuns persuaded them to part with their packages for a few moments and group themselves together for a song. They sang us a little French song about the sailors' work at sea, accompanying the words with appropriate gestures. They sang well and were not in the least self-conscious in performing. Approving cheers went up as they finished. Then, the tallest of the girls stepped forward and said: "Merree Chreestmas! Happee New Year! Ev'reebodee." More cheers and applause.

The *Breck's* distribution of gifts was a little later than ours, due, no doubt, to the fact that, somehow or other, little boys can eat more than little girls. Each boy was presented with an elaborate knife of many blades as his principal gift, and several other remembrances.

If one of the principal missions of the U. S. Naval Forces in Europe was one of good will, certainly the Christmas parties carried out the idea. The other ships, stationed elsewhere for Christmas, also had their parties for poor children, and such gestures of genuine friendship went much farther toward gaining the good will of the nations in which they were made than dozens of flowery speeches of high sounding, yet hollow and meaningless phrases. Nor were the Christmas parties carefully "diplomatted" affairs that were deliberately planned to make good impressions and thus boost trade with the home country. Each ship gave its Christmas party because such

a party had become a navy custom, and, though away from home, each ship was merely "being itself." And after all, that is probably one of the main reasons for the success met with and the appreciation showed.

The newspapers of Marseilles were full of the *Breck's* and *Toucey's* Christmas parties, and great appreciation was expressed editorially in all the papers. The heads of the institutions whence the Christmas guests had come were superlative in their words of gratitude. The Mother Superior at the home of our little orphan girls wrote as follows:

Madame la Superieure de l'Orphelinat de la Providence et ses Religieuses prient Monsieur le Commandant et sa famille d'agréer leurs respectueux hommages et les remercient bien sincèrement de leur generosité peu commune vers leurs petites orphelines.

Thanks, however were really unnecessary, for all hands enjoyed having *les petites orphelines* on board. When the time (to go back to the end of the Christmas party) arrived to say good-bye, the little girls dropped their bundles on deck, threw their arms around their benefactors and kissed them, pouring out the while torrents of French. Darkness was setting in, though, and the little girls were made to cut short their affectionate adieus. Slowly they walked over the side and climbed down the ladder to the float, and slowly they made their way along to the dock, looking back every few steps to wave their hands to the bluejackets—an intricate maneuver, considering the amount of excess cargo they were carrying. The men crowded to the gangway, the after-deck house, the fantail for a last word with their little friends, and responded to their waves of hands by waving their hats and cheering lustily. An immense crowd of people thronged the *quai* down to its very edge. As each girl reached the dock, she turned to wave a final good-bye, and was swallowed up by the crowd. The last little girl, the smallest of them all, climbed upon the dock assisted by a nun. She turned and blew a kiss, and then she, too, disappeared in the human sea. The party was over. Christmas night had come. The Star of Bethlehem shone down once more on the Tricolor and the Stars and Stripes. The ships again steamed at full speed astern, backing away from Christmas and into the New Year.

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EVERY COMMANDER *tries to get the initiative. He wants to have the first move. The reason is that the enemy must reply to your move, and in order to reply must first find out what your move was, what you have done. To find that out is the chief difficulty in war. Wellington once said that he had spent his time for years trying to get to know what was going on on the other side of a hill. Sherman described a general's chief anxiety as caused by "what he can't see the enemy doing." The commander who has the initiative throws this difficulty on to his opponent, and in general the initiative is with the attacker. I say in general, because the attacker may lose this advantage by a false move; probably if neither side made any mistake—which is out of the question—the attacker would always have the initiative. Troops, it is generally believed, prefer to attack. The men are said to dislike the suspense of waiting for the enemy.*—WILKINSON

Photograph by Woodward, U.S.S. "West Virginia"

SANTA CLAUS ARRIVING ON BOARD THE *WEST VIRGINIA*, CHRISTMAS, 1929

He arrived alongside in a seaplane and was received with honors with several hundred children as spectators.

Photograph by Woodward, U.S.S. "West Virginia"

THE SECOND DIVISION CHRISTMAS TREE, U.S.S. *WEST VIRGINIA*, 1929

Photograph by Woodward, U.S.S. "West Virginia"

THE SECOND DIVISION CHRISTMAS TREE, U.S.S. *WEST VIRGINIA*, 1929

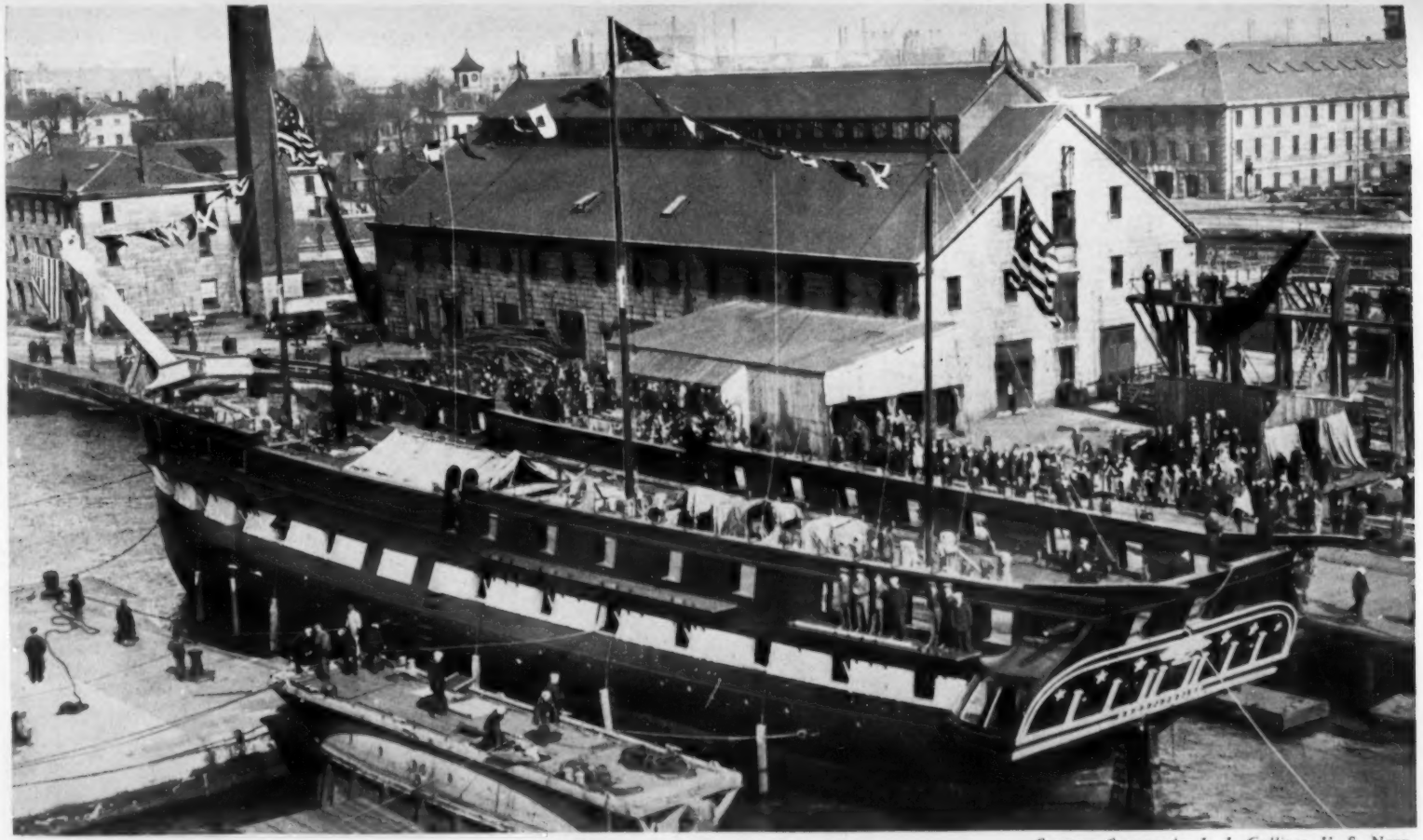
Photograph by Woodward, U.S.S. "West Virginia"

THE FIRST DIVISION CHRISTMAS TREE, WITH FIREPLACE, ALARM CLOCK, FAMILY PICTURES, AND ALL U.S.S. *West Virginia*, Christmas, 1929.

Photograph by Woodward, U.S.S. "West Virginia" "E" DIVISION TREE, U.S.S. *WEST VIRGINIA*, CHRISTMAS, 1929

Photograph by Woodward, U.S.S. "West Virginia"

"E" DIVISION TREE, U.S.S. *WEST VIRGINIA*, CHRISTMAS, 1929



International News Photo, Inc.

Courtesy Commander L. J. Gulliver, U. S. Navy

THE LAST LAUNCHING OF THE *CONSTITUTION*
The ship is leaving the dry dock at Boston.

Courtesy Commander C. L. Brand (C.C.), U. S. Navy

THE FORMER REBUILDING OF THE *CONSTITUTION*

The ship was hauled out for repairs and considerable rebuilding at the Navy Yard, Philadelphia, in 1873.

LIMITATION, PURE AND APPLIED

By Commander Thomas D. Parker, U. S. Navy (Retired)

Editor's Note: *This article was submitted last year in the prize essay contest, and some of the statements in it may not now be up to date.*

THE subject of this paper is naval limitation, past, present, and future, in theory and in practice. Admittedly, this subject is not new; but it is of paramount importance. Old ideas from a new point of view may tend to a correct solution in 1935.

The calling of each naval conference has been based upon the possibility, though not the probability, of wars among the signatory powers. It will not be necessary, therefore, to dodge the frank mention of our naval rivals and cosignatories to the tripartite agreement. No officer of the American Navy wants war with either Great Britain or Japan; few, if any, Americans consider such war imminent; but a discussion of what might happen in case of war is involved in the subject. Particularly it should be remembered, to quote Clausewitz backwards, that diplomacy is war in another form; and that the success of American diplomacy will depend largely on American sea power. We must consider a balance of forces rather than forces in action.

Nor can we ignore economic factors. Our traditional maritime friction with Britain, culminating in the first years of the World War, was the outcome of our resolve to resist trade monopoly at sea. Experience in that war makes us unwilling to submit again to the imposition of belligerents. The high seas should be as public as the highways. President Wilson announced this policy and public sentiment has endorsed it. We do not fear that Great Britain will war on us; but we have reason to fear that if she is drawn into a European war, she may again take an unfavorable attitude towards our commerce. It is for this reason that we insist on parity with Great Britain. Exporters do not wish to see their cargoes again detained at will by a belligerent; Americans in general are tired of having their neutral mail overhauled and their trade secrets exposed in foreign ports. At the same time, it may probably be said, historically and otherwise, that our dearest national policy, the individual policy of millions of Americans, is, "Let us have peace." Hence the three disarmament conferences called by three American presidents.

Before analyzing the results of these conferences, it is important to state, more precisely than is usually done, the theory underlying naval limitation pacts. In the application, in spite of some progress made, certain fallacies have been accepted, and some wrong principles established, through a wrong conception of the purposes, or what should reasonably be the purposes, of such agreements.

Certainly, the fundamental idea of limitation is a scaling down, that is, if the potential (not necessarily the actual) naval power of one country is ax and that of another ay, it will be fair to both, and vastly more economical, to divide through by a and leave the naval establishments in the proportion of x to y. If it is assumed, for political or other reasons, that the potential powers of the two countries are the same, x must be made truly equal to y. The agreed value of x (equaling y in this case) would depend on the strength of nonsignatory powers. All this seems too simple for words; yet confusions creep in, abroad and at home.

Elaborating the statement of theory: what a country should fairly have after limitation, which, for the general good, should usually mean reduction, should be a function of its whole potentiality to create naval establishments. What should be counted as allowed by any pact, should be the entire naval establishment, in the broadest sense. Establishment should be in proportion to potentiality.

Potentiality, as the term is used, involves

THE FORMER REBUILDING OF THE *CONSTITUTION*
The ship was hauled out for repairs and considerable rebuilding at the Navy Yard, Philadelphia, in 1873.

primarily wealth. It also includes such tangible and intangible factors as shipyards, merchantmen, personnel, even a naval tradition; all that enables a country to create a navy. Since time is of essence, it includes an important factor common to establishment, the fleet building or in being. Establishment, as allowed, should include not only the combat fleet but also personnel, convertible merchantmen, bases, and various other factors; some, as said, also factors of potentiality. Continuing the theory: it has been deemed that the best way to prevent the fears and jealousies that lead to war, is to assume and create parity, what South Americans call a prudent equilibrium, either absolutely or in possible theaters of war. In the case of Great Britain, comparing her strength with ours, actual parity is the goal; in the case of Japan, parity in the Western Pacific. The 10:10:6 ratio was supposed to safeguard all parties.

As to the confusion; though the ratio of a power for scaling down should be based on its potential strength, we begin to hear of needs, even of weaknesses, as a ground for increasing a ratio. Great Britain's alleged liability to starvation is cited as a reason for giving her a fleet always superior to that of the United States. Her weakness in that respect is to be her strength, enabling her to impose her policies on neutrals in time of war—a view suggesting the adjuration to youth in a well-meaning booklet "reverence weakness." Many Americans have been sympathetic to the contention at Geneva that the British need of protecting a far-flung commerce should entitle Britain to a larger fleet than ours, forgetting that we, too, have a far-flung commerce, on which some 12,000,000 of our people and many of our essential industries depend; with trade routes from 1,000 to 12,000 miles long, for our rubber, tin, manganese, and nitrates; and that some of Britain's routes are short and beyond our reach.

So far as concerns ratios, this idea involves a complete departure from the scaling down theory. If the object is to allay jealousies through stalemates, why should we tie our own hands and make ourselves decisively weaker than another power because of that power's needs? Needs may establish a minimum below which one party does not choose to go, but this has no bearing on the question of ratios. Yet how many Americans, not to speak of British diplomats, have urged the contrary!

It is not fear of starvation that has built up the greatest sea power in history and ordained that for a century Britannia should rule the wave. It has been and is British imperial and industrial, commercial, financial expansion, British wealth and prosperity, that "will to live" of which Prime Minister MacDonald speaks, the will to live, to grow, to realize its possibilities.

The fact that Britain is a kindred nation to whom our people are friendly and with whom we are not likely to wage war, is aside from the point. Diplomatic war, trade competition, is continuous. But the fallacy of fallacies consists in treating factors difficult to measure as if they did not exist, and in assuming that if mere combat parity be almost secured we are safe. This departure from theory is all the more dangerous because the mass of the public have no idea of any distinction between combat parity and actual parity. It is a truism that, with parity between two countries in combat fleets, one may have a decisively superior navy.

For years our proclaimed policy has been "A navy second to none." Are we living up to it if we accept mere fleet parity, with Britain overwhelmingly superior through her merchant marine and her bases, and Japan stronger than we could be in Japanese and in Philippine waters? In these conditions we may, or may not, be reasonably safe, depending upon several factors. As to Great Britain, the probability is that if the question of neutral rights arose, other powers on her flanks would lessen her effective strength against us. If the battleship holiday ends, and carriers are developed, her overwhelming superiority in cruisers, naval and convertible, will be less important. But suppose no more battleships are built, as is possible for economic reasons. By 1941 each country will have two battleships; and soon thereafter the 8-inch gun cruiser (disregarding, for the moment, the *Ersatz Preussen* type) may be a capital ship. Britain's merchant marine, supplying 6-inch gun cruisers, may then be of decisive importance; and her numerous bases will give small naval cruisers, unlimited by the treaty of London, a new value. Of course, the future effect of aircraft, as minimizing cruisers, is problematical.

Meanwhile, why squabble over a few tons of 6-inch-gun cruisers when Britain's con-

vertible merchant cruisers are three to our one? From 1922 to 1927 she outbuilt us in the ratio of 50:1. We cannot ignore such factors merely because we have no perfect yardstick. Is it harder to compare a convertible merchantman of 8,000 tons with the *Omaha* than the *Nelson* with the *Wyoming?* In spite of our real friendship for Great Britain why should we voluntarily accept inferiority, our object being mutual security, not the quixotic insurance of her safety?

As to Japan, much hinges on our Philippine policy. If, as seems not unlikely, we are to grant the islands independence in a few years, our hazards in oriental waters will be correspondingly lessened. It may be deemed wise in case they are seized by another power not to risk blood and treasure in the gamble of retaking them, but to achieve the same ultimate result in other ways. Though the value of forts cannot be exactly stated in battleships, Japan gave them a figure in 1922 when she reduced her demand from 10:7 to 10:6 in exchange for the non-fortification agreement.

Surely, in contested cases, intangible factors should be given some weight. If Great Britain has 424 fast merchant vessels of over 8,000 tons to our 143, she need not balk at our having twenty-one 8-inch gun cruisers instead of eighteen within our allowed tonnage. Combat parity is dangerous as creating a false sense of security.

In considering the action of the limitation conferences, one fact should be kept prominently in mind. Particularly since the World War, the United States has been "long" in the chief factor of potentiality, national wealth. If our intentions were aggressive, no nation could compete with us, and no enemy prevail except by sudden attack. The sacrifice at Washington of our superiority in battleships was a monumental concession towards peace. The recent statement of our President: "We will go as low as you do, we do not care how low," breathes the same spirit of refusing to use our wealth as a club.

The naval situation when the conference at Washington was called may be summed up as follows: The action of the British in establishing a so-called long-distance blockade of enemy ports prior to our entry into the war, and in exercising the right of search on American ships destined for neutral ports had caused much resentment in America and had had serious economic repercussions. By 1916 President Wilson had determined to secure the freedom of the seas by building a navy second to none. In pursuance of this policy an enormous program of battleship and other construction was begun, and by 1921 we had ten battleships and six battle cruisers, built and building, that Great Britain, impoverished by war, could not possibly match. In addition, of course, we had our older battleships. Ours was not a paper navy; but our new capital ships averaged some 43 per cent complete, and some of them were almost ready. For the first time in history the command of the sea was to be ours, and Great Britain could not dispute it. Our object was not aggression; for at this time our people, certain elements excepted, were very cordial to the British. We did intend to safeguard our trade and our neutral rights.

Lacking funds, and reluctant to make war, the British resolved to secure their results by propaganda in America and by diplomacy. The Washington conference was called at their suggestion, and the American delegates, eager as always for peaceful agreements, jumped to the conclusion that when Mr. Balfour and his colleagues accepted parity in principle they meant it to apply to all classes of vessels. A strict examination of the language used shows that they did not commit themselves thus far, though this impression was certainly created in the American mind. They played the diplomatic game with keenness, and let the American delegation run away with the delusion of parity.

After we had agreed to scrap enough capital ships, in which we were strong, to bring us not only to, but far below the British level, it transpired that parity was not to extend to the classes in which we were relatively weak. It did include carriers, then in an experimental stage. One ship scrapped was almost completed, and two battle cruisers were converted into oversize aircraft carriers at a great loss in money and aircraft tonnage. Altogether we scrapped ships on which we had paid out more than $150,000,000. The monetary and the naval losses were huge, and no other country made comparable sacrifices. We were yielding our advantage in battleships and getting no return in other classes. Against our eighteen capital ships, England was to have twenty-two at first and twenty

on the completion of the *Rodney* and *Nelson,* two splendid post-Jutland ships, four years later than our latest. Our ships were out-classed in speed and in gun elevation. The total British gunfire was of course greater. Their late ships had better protective decks against air bombing, and "blisters" that ours lacked. Actual parity, even in battleships, was not to be reached until 1942, twenty years later. The original plan called for the scrapping of the Japanese dreadnought *Mutsu,* then under construction; but for sentimental reasons the Japanese were allowed to retain this vessel and scrap older ones.

It was then that Captain Dudley Knox wrote "The Eclipse of American Sea Power," and that Frank H. Simonds, the great civilian expert, pronounced the "Battle of Washington" the greatest naval victory that Great Britain had ever won. Lord Balfour was made an earl. It was announced that though there was no express limitation of auxiliaries, the example of the United States would doubtless be followed as regards these craft. Unhappily this did not happen. As soon as the treaty was signed, the British and the Japanese transferred their energies to cruisers and other auxiliaries. We built none, depending on the power of example.

As regards Japan particularly, there was another important feature of the treaty. She had insisted, probably for purposes of negotiation, on a ratio of 10:7 against 10:6 proposed, but yielded on condition that a clause limiting defensive fortifications in the Western Pacific should be inserted. Her chief fortifications were about complete. Great Britain was allowed to build a great new base at Singapore, but the United States lost the right further to fortify Guam, a vitally important stepping stone to the Orient, or the Philippines where we greatly needed a proper naval base. This cut our strategy to the bone. In case of a war with Japan, of which there was real danger then, we should have to reach out with a 5,000-mile arm from Hawaii. A third of our fleet would be coming or going. The ratio of 10:6 left us only a desperate gamble. Today this situation is intensified by Japan's ability to use aircraft and submarines in her own waters. What seemed an important consideration for these sacrifices was the abrogation of the British-Japanese alliance. But it is now known that, under pressure from Canada, Great Britain had already determined to abrogate this treaty.

Several years passed during which we fell badly behind. In 1927, becoming alarmed, President Coolidge called a conference at Geneva to complete the work of the Washington conference by limiting cruisers, destroyers, and submarines. Not through the fault of the American delegation, which consistently urged parity with reduction, this conference was wrecked on two rocks.

Great Britain insisted, first, that the basis of parity should be a larger cruiser tonnage than we wanted or needed; and secondly, that within our allowed tonnage and within the size limits of the Washington treaty we should be limited to a fixed number of 8-inch gun cruisers and forced to complete our tonnage with a type we did not want. She would not budge; our delegates would not consent to "limit up" or to accept foreign specifications. Following this breakdown, a certain tenseness crept into the relations of this country and Great Britain, already strained by the question of the war debts. A British publicist expressed his grave concern at the drifting of the two countries towards war. Soon afterwards he became the British premier.

Then, as an interlude, came the Kellogg-Briand pacts, vaguely breathing peace. We should not overestimate their direct effect. To use the President's expression, "They are not implemented." Moreover, their application is far more limited than many supposed. They do not apply to defense wars, and what war is not "defensive"? There are reservations or exceptions—ours in connection with the Monroe Doctrine; Great Britain's regarding her unnamed spheres of interest; and various others. We cannot rely on these pacts. As the Mexican ship captain said, when asked why he did not replace a broken section of rail, "I fear the passengers will lean on it and fall into the sea."

One view of the treaty of London, admitting its defects from the American standpoint, makes it the best negotiable at this time and an important step towards peace. At least the principle of parity in all classes has been recognized, leaving us free to build up to a conventional parity without arousing suspicion abroad and denunciation at home, but a critical study of this treaty may clarify our ideas for the future. We went into the conference badly handicapped.

Japan had twice our cruiser tonnage and Great Britain four times. If they waited for us to catch up, their shipyards would suffer. Our war-built cruisers and our submarines were defective in quality. Underlying questions were unsettled: with Great Britain, the freedom of the seas, insisted on by President Wilson; with Japan, her free hand in Manchuria and the Orient, and the non-fortification agreement. The matter of Japanese exclusion had been in the foreground since 1924, with feeling too strong to be ignored. Japan seems also to have vague fears of aggression or of interference on our part; and her shadow is always over our Philippines. Wisely, perhaps, the solution of these problems was postponed pending the extension of treaty ratios to all classes of naval vessels.

It is interesting to note that the parties began with a statement of needs; though in strict logic it should have been of assets, as a basis for reduced strengths. The American delegation quickly abandoned the attempt (if ever made) to secure any but combat parity. Apparently there was no talk of allowance for any intangible factors. We were striving for limitation rather than for parity. It soon transpired that, if there were to be any treaty at all, the United States would have to make substantial concessions to both Great Britain and Japan. As at Washington, neither of these countries made corresponding concessions. Great Britain did not budge a ton from her original demands. Her consent to reduce in cruisers from seventy to fifty was a matter of scale, not of ratios—it did not affect her strength relative to the other two signatories. Japan demanded and eventually gained a ratio for auxiliaries of 10:7 instead of 10:6.

The American delegates were in a difficult position. Great Britain was supported by delegations from other members of the British Commonwealth of nations and, in some cases, made them responsible for her unyielding attitude. There was a strong insistence on a treaty of some kind in America, where pacifism was organized. It was also evident that a treaty would effect world economies and tend to better feeling.

But from the naval standpoint did we secure even the combat parity so far short of real parity?

Considering ratios with Great Britain in battleships we improved matters by scrapping three ships to five. In gunfire the two treaty battleship fleets are approximately equal; perhaps with a slight advantage in the American fleet, in spite of the fact that we have three great gun calibers against the British two. The guns of the fifteen retained capital ships are as follows:

United States	*Great Britain*
24—16 in.	18—16 in.
124—14 in.	100—15 in.
12—12 in.	
Total 160	118

But the total British battleship tonnage still exceeds ours by 12,350 tons, or almost half a battleship (not counting the added tonnage from the modernization of our ships). It is not to be supposed that this tonnage has been wasted. On the contrary, they have, within limits, deliberately preferred speed to gunfire; and, aside from the high speed of their battle cruisers, which may be extremely useful on occasion, their fleet speed averages 23 knots against our 21. This gives them the "weather gage." Aside from this, it is clear that we have nothing to match the *Rodney, Nelson,* and *Hood,* with their various post-Jutland features, while our one retained 12-inch-gun vessel means a weak spot in our line. If the battleship holiday continues, we shall eventually face the *Rodney* and the *Nelson* with the *Maryland* and the *Colorado,* designed four years earlier and pre-Jutland. Until we build new battleships, in spite of the cost and despite our pacifists, we shall remain inferior to Britain in this element of naval might.

Coming now to cruisers: it is a matter of sheer common sense that only those built during the life of the treaty should be counted, or counted in full. Others pertain to the unknown future, and may meet the fate of our battle cruisers. In this matter there was clever strategy at London. Our delegates faced the staggering fact that others "had been building while we had been hoping"; and that now it was asking a great deal of Britain and Japan to stop building while we caught up. On the other hand, their financial position was such that a holiday may have been a necessity, while we had the gold from which fleets are built.

To begin with, conceding a point of vital importance, we accepted foreign dictation as to types within a category. Instead of building the irreducible minimum of twenty-one

8-inch-gun cruisers proposed by the General Board, we were limited to sixteen, with two post-treaty additions for which to hope. One of these sixteen could not be finished until 1936, the last year of the treaty. The seventeenth might be finished the day after the treaty expired, and the eighteenth a year later. On the other hand, Great Britain might have her four big cruisers of the *Hawkins* class (laid down in 1916-17) until the very end of the treaty, thus giving her nineteen cruisers of maximum (or practically maximum) size to our sixteen; or during most of the treaty period to our fifteen.

Moreover, by art. XIX of the treaty, "Replacement tonnage may be laid down for cruisers and submarines that become 'over age' in 1937, 1938, and 1939." Hence, if we consider ships building as well as built, Great Britain may have on the ways at the end of the treaty 86,000 tons of cruisers in addition to those to be replaced; while this clause affects the United States only to the extent of 14,000 tons. It covers no 8-inch-gun vessels. Altogether at the end of the treaty:

> Great Britain can have built and building a total of 425,350 tons of cruisers; the United States will have built and building a total 337,600 tons; a superior tonnage built and building of Great Britain of 87,750 tons.

Thus, whether we consider the term of the treaty or the period immediately following, Great Britain is to have a great advantage in cruisers. Until the end of 1936, she will have a superiority of 35,000 tons; and until almost the end, this advantage will be increased by 39,426 tons of the *Hawkins* class—a total of 84,026 tons, comparing with the 87,750 tons, built and building, immediately after the treaty term.

The most striking feature of this is that, in spite of our sacrifice of 15,500 tons for the privilege of superiority in the 8-inch-gun subcategory, Britain gains, during the term of the treaty, superiority even in this. The right to duplicate the British cruiser fleet becomes a mockery, since it would involve having only fifteen 8-inch-gun cruisers against the irreducible twenty-one, and building 22,500 of a type that we do not want, in addition to the 83,500 (or more) unneeded tons of this type that we shall be forced to build for nominal parity, even assuming that we could use six 6-inch-gun cruisers of 10,000 tons.

Indeed, since our British friends have made an intimate study of American psychology, it is far from unlikely that in granting us a large paper 6-inch-gun fleet they relied upon the fact that the unneeded 6-inch-gun ships would not be built, leaving them undisturbed in their combat superiority. Many officers now share the view of Admiral Jones that we should not go "frozen" in the conference of 1935, and the National Council for the Prevention of War is always ready not to build ships.

In connection with our allotment of cruisers one of the principles stated above might well have been invoked. If we cannot exactly measure the superiority of the British merchant marine in 8-inch guns, we know beyond question that it exceeds the equivalent of three big cruisers. Should we have to haggle over a few dollars when our friends have the pearls and the diamonds?

There has been much discussion as to whether, after all, we cannot use 143,000 tons of 6-inch-gun cruisers to good advantage. It is contended that up to about 4,000 yards 6-inch guns will pierce the armor of cruisers as well as 8-inch, and will fire much faster; that in a fleet action with short ranges, or in any action with low visibility, twelve 6-inch guns may be more effective than nine 8-inch; that the treaty permits 10,000-ton vessels in subcategory (b), limited to 6.1-inch guns, and that these may have as long or even longer steaming radius.

As has been pointed out in the hearings, these arguments lose sight of some very pertinent factors. With a limited number of cruisers, the convertibility of the 8-inch-gun type is important. It can be used anywhere and is now the only satisfactory type for convoying or for other detached operations. If 6-inch guns are to be mounted in turrets, the quick-fire ratio is reduced to about 2:1. The striking energy of the 8-inch-gun shell is of course much greater, averaging about 3:1. By reducing the number of 8-inch guns we can provide for secondary batteries of 5-inch guns to take care of quick-fire needs. Above about 10,000 yards, the 8-inch gun can pierce cruiser armor where the 6-inch cannot. At long ranges spotting for the 8-inch is much more effective (owing to the larger splash), unless aircraft are available. Certainly the weight of naval opinion favors the 8-inch type for all-around purposes; and certainly we should be free to choose our own type.

There is danger under art. XIX of the treaty and under the escalator clause that an unsatisfactory condition may become more unsatisfactory. In these two articles there is a question as to whether category or subcategory is meant. With one interpretation, Great Britain would have the right (under art. XIX) to replace 6-inch-gun cruisers with the larger gun type. With the other interpretation we should have to match 6-inch-gun ships built under the escalator clause, if we matched at all, with others of a type already in excess. Correspondence subsequent to the treaty shows that it is not the intention of the present British government to replace 6-inch-gun ships with the larger type.

Turning now to the Japanese ratio: testifying before the Senate Naval Committee, Admiral Yarnell stated:

> Senator, when you come to a discussion of operations in the far Pacific, it becomes something for a closed session, but I think I can say this far in open session, that at no time since we took the Philippines has the chance that we could go immediately to the Philippines with our fleet and conduct successful operations been anything more than a desperate gamble.

Admiral Jones testified that 5:3 in the Western Pacific means 5:5 plus; and Admiral Pringle expressed the view that we had only a sporting chance. An increase of that ratio without abrogation of the non-fortification agreement is therefore a matter of grave concern, unless we intend to give up the Philippines or not to retake them directly, if seized.

Relations with Japan seem to be amicable at present. Adoption of a plan to extend the quota system to that country may allay the feeling that still exists over Japanese exclusion. We have not been aggressive against Japanese policies in China and in Manchuria, but it is evidently the intention of the Japanese government that if anything untoward should happen, they shall be in the stronger position in Western waters. The successful Japanese jockeying at the London conference was very striking. There was a constant nibbling at our fleet; a constant adding in small ways to their own.

Rear Admiral W. L. Rodgers said to the Senate Naval Committee:

> She wants dominance in the Far East, and her policy in these conferences of Washington, of Geneva, and of London, is to make herself as secure as she may be, so that if she chooses she may confront the world some day with an established fact: and as we reduce our fortifications and reduce our ratio she is that much more secure.

Though weak in auxiliaries before the London conference, we at last had a building program that would have ultimately brought us up to the 5:3 ratio unless Japan had built ruinously. But at London we accepted a ratio that made the gamble more desperate, considering treaty strengths, than before. For the ratio of 5:3 in principle we substituted 10:7 plus, in fact.

The details are too well known for repetition here. But one significant point, illustrative of American easy generosity, should be emphasized. The aggregate of minor, uncompensated concessions to Japan is important. Among these are:

(a) The non-completion of two of our 8-inch-gun cruisers until after the life of the treaty, already referred to.

(b) Japan's right to begin scrapping (converting) her battleships six months after the other parties begin scrapping.

(c) Japan's gain in battleship ratio: while she gets no tonnage in excess of the 5:3 ratio, she scraps one old ship to our three, and retains fast, effective ships making her true ratio exceed 5:3.

(d) The clause forbidding carriers of 10,000 tons or less mounting a gun above 6.1-inch (put in at the instance of Japan.)

(e) Increase of speed of unlimited vessels permitted under art. VIII—an advantage to a country fighting in home waters.

(f) Japan's right to replace two old mine layers by new ones. We might do the same, but it helps her and would not help us.

(g) Japan's right to use three vessels of the *Kuma* class for training purposes after making certain alterations that would not completely disable them.

(h) Japan's right (art. XVI, paragraph 4) to keep 24 destroyers of 1,700 tons each, about 40 per cent of her total, against our right to have only 16 per cent of over 1,500 tons, giving her a considerable ship-for-ship superiority.

(i) Her right to lay down in advance, prior to the end of the treaty, replacements for three big destroyers (art. XX, section "d").

(j) Her right to replace the *Tama* a year ahead of time (art. XX, section "b"). Contrast (a), above. In general, where the United States is especially affected, it is by way of concession.

(k) The stipulation, to satisfy Japan,

that only 25 per cent of the allowed total cruiser tonnage may have landing platforms, a proviso prejudicial to a navy in distant waters.

Commander Train testifies that most of the above concessions were made *after* the ratio was agreed upon. The net effect of all these is that, at the end of the treaty, Japan will be considerably stronger, relatively to us, than appears on its face, making the desperate gamble still more desperate.

This review of past agreements leads to the all-important question: What should be our attitude in 1935?

If, by diplomatic negotiations, or by joining a strong league of nations, we have settled the question of the freedom of the seas, the question of our ratio with Great Britain may be far less important. If the Philippine question has been settled, if friction over Japanese exclusion has been abated, if a prudent equilibrium has been reached in the Orient, the Japanese ratio may be far less important. But certainly the artificial non-fortification agreement should be reexamined in connection with that ratio. Perhaps it was wise, pending an adjustment of auxiliary ratios, to eliminate underlying questions from the London conference; but in 1935 they should be faced.

Perhaps real parity can be secured only through the building up of our merchant marine, which has been strangely hampered by the La Follette law, by our relative lack of trained crews, our high wages, the high cost of shipbuilding in this country, and our curious registry laws. Meanwhile, we should insist on some compensation for factors known but not easy to measure.

As a matter of sheer common sense, why should a potentially stronger nation tie its hands by treaties that do not give it security? The theory has been that each party must be too strong to fear the other. Considering Great Britain's advantages, the only safety for us—meaning that of our trade routes—lies in a combat navy stronger than hers. How much stronger may be a matter of guesswork. She has little to fear from us. We could not starve her, even supposing that European enemies could. The worst would be interference with her private rights in the public maritime domain. But so far we have accepted a weaker combat navy than Britain's, resolving doubtful questions in her favor in order to have a treaty.

This is not surprising. There was justification in not asserting our own clear rights too suddenly. Washington and London were both steps towards peace. But times have changed. We have greater power and a greater stake than ever before.

To summarize what has been already suggested: In 1935 we should insist on our right to minimize Britain's advantage in 6-inch-gun cruisers, naval and convertible, by building, within our tonnage, as many trade-protecting cruisers as we please. We should insist on consideration of our wealth and our power to build naval cruisers offsetting the merchant ships that Britain chooses to build.

We should not accept a further battleship holiday without compensation for the *Rodney*, the *Nelson*, and the *Hood*.

It goes without saying that we cannot ignore the ships of nonsignatory powers—France, Italy, Germany with her *Ersatz Preussens*, even Sweden with her new armored cruisers.

Our future depends largely upon our carriers, remembering our lack of bases. Why should we accept limitation as to landing platforms, if we may have to fight in distant waters? Under the Washington agreement there was no such limitation. We are already handicapped, because of our scrapping policy at Washington, by having to use up 66,000 tons of our tonnage in vessels having little more value as carriers than 45,000 tons would give in specially designed craft. We have a further handicap in Britain's two experimental carriers, which, having considerable value, are not counted; against our old *Langley* also not counted.

We cannot ignore fears and suspicion, pride and tradition. With a history of almost continuous naval victories (except in 1812), Great Britain will be implacable against any treaty that does not give her real parity. Nor could she have accepted the one-power standard without a period of mental adjustment. Tact may outweigh several cruisers in our settlement with Japan.

We cannot ignore political and economic fundamentals. If limitation is to last it will be based on an understanding of political conditions, raw materials, food, and trade. There should be much preparatory work for the next conference and less haggling after it meets.

SEA SCOUTS

By Commodore E. S. Clark, Jr., Sea Scouts

IT IS surprising to find the number of men in the naval and coast guard services who know little or nothing of the sea scouts. This organization was established some twelve or fifteen years ago as the nautical branch of the Boy Scouts of America. Since then it has grown to become a very important branch of the scouting movement. Enrollment is open to any boy who has passed his fifteenth birthday, although the ranks at present are mostly filled by boys who were at one time, or are at present, boy scouts in the land division.

The primary purpose of the movement is to develop character, train the youth of the nation to be good loyal citizens and to make them self-reliant. In doing this through the sea training a youth is bound to become more or less sea minded, which is something very much to be desired in the present generation. Almost every younger boy in the country has at some time the desire to become better acquainted with the sea. He reads tales about such men as John Paul Jones, Farragut, Porter, Dewey, and Sims and wishes he could have had some of their experiences.

The sea scout movement gives this boy the very opportunity he has been longing for. The sea scouts are located all over the country in small groups called ships and patrols. A ship unit consists of a number of scouts organized into crews with a coxswain in charge of each crew. The unit itself is in charge of an adult leader known as the skipper, who is an American citizen and one trained for the job. He has for his assistants, several mates who must be over eighteen years of age. These mates are men who have come up through the ranks. The patrol unit is a group of eight or nine boys organized in an already existing boy-scout land troop. These boys are all first-class land scouts who have come up through their troop and have suddenly found they are outgrowing the land scout activities and are looking for a program that offers them more of a man's job to handle.

Once a unit is formed the boys start in passing their apprentice sea-scout tests which consist of the following: Demonstrate how to tie twelve specified knots; know the history of the American flag; know the significance of the sea-scout badge; write a 200-word article on the sea history of the United States; demonstrate the proper use of the life belt and ring buoy; and take the sea-scout promise.

> On my honor, I will do my best:
> To learn swimming and always be prepared to render aid to those in need in connection with water accidents;
> To make it my practice to know the location of the life-saving devices on every boat I board; and to mentally outline my responsibility in maintaining order for myself and shipmates in case of emergency;
> To be vigilant and cautious, always guarding against water accidents; to coöperate with the responsible authorities for the observance of all regulations for the conduct and safety of boats, and ever seek to preserve the motto of the sea, *women and children first.*

Upon completing this the scout is a full-rank apprentice and wears the badge of that rank.

After serving the required time an apprentice is permitted to come up for examination for the rank of "ordinary," which consists of tests on knowledge of sea history, boats, canvas work, the compass, relative bearings, elementary navigation, swimming, abandon ship drill, and several other subjects necessary for going to sea.

The "ordinary" tests having been passed, the scout goes on to the rank of "able" which consists of more difficult work in connection with navigation, piloting, ship handling, sextant work, rope splicing, lead line, and the usual other advanced subjects of sea training. Third and highest sea-scout rank is that of "quartermaster" which is very difficult and requires much study and service.

These sea scouts are given excellent opportunities to make cruises during vacations on board training schooners operated by

the sea-scout divisions along the coast. Excellent training is received on a cruise and the scout has an opportunity to get really acquainted with the sea. In addition to these schooner training cruises, in certain sections of the country the scouts are being taken for training cruises on board the Coast Guard destroyers out on patrol. This latter type of training has been worked out excellently in the Boston district for the past two years. Scouts are taken out in groups of ten in charge of a commissioned officer. During the time they are at sea, they stand watches and do a regular sailor's work about the ship. These destroyer cruises have proved most valuable to the scouts and have brought a great deal of very desirable publicity for the Coast Guard. Were a boy to believe all he reads in the newspapers about the Coast Guard he might not at times be very favorably impressed. Once he has taken a cruise on board one of the destroyers out on rum patrol he realizes what a hard job the Coast Guard is up against and he comes back singing its praises.

The Navy Department is giving the sea-scout movement excellent coöperation and support. Several years ago Congress passed an act authorizing the Secretary of the Navy to issue, free of cost, to sea-scout units certain condemned boats and surplus equipment, the result being that every sea-scout unit desiring it has its own whaleboat, cutter, or motor sailer. Many of these boats have been rebuilt by the scouts into very handsome and seaworthy cruisers. Every so often a notice appears at all local sea-scout headquarters stating the boats available for sea-scout distribution and the navy yard at which they are located. On shore these scout units meet in buildings very similar to those used by the naval reserve. In some cases the scouts are meeting in naval reserve barracks. The commandants of all navy yards have been most generous in allowing scouts to hold meetings in naval barracks.

The uniform of the sea scout is identical with that of the enlisted navy man except that sea scouts have two white stripes on their collars and cuffs instead of the three and their rating marks are in white instead of red. These markings are on the right sleeve of the jumper under the insignia of the movement. In the case of white uniforms the insignia is blue.

The commissioned officers' uniform is similar to that of the Navy except his coat is of the two-button, double-breasted type, instead of three button. His cap is the same except for the embroidered device and chin strap which are in silver instead of gold. The device consists of the sea-scout insignia superimposed on embroidered fouled anchors. Sleeve stripes are also of silver with sea-scout insignia on anchor above. The sea-scout uniform and insignia are protected by the same act of Congress that protects all other scout uniforms.

Sea-scout officers are trained in schools which are conducted in the district in which the officer is living. The instructors generally consist of naval and coast guard officers and regular scouting instructors and naval architects. Officers' training courses are very complete from the standpoint of teaching the officer how to deal with the youth as well as the necessary sea training. A certain prescribed course is laid out by National Sea Scout Headquarters in New York which is generally adhered to. During the winter season of 1930-31 the writer conducted a training course at the Boston Navy Yard which was attended by seventy-five officers and older sea scouts. The course consisted of a three-hour session held one night a week over a period of seven weeks and a Saturday afternoon closing session. Several naval officers attached to the yard acted as instructors. The naval reserve furnished several instructors and the closing session of the course was held on board the United States cruiser *Richmond* with her officers acting as instructors through the courtesy of Captain Babcock, the ship's commanding officer.

A great many naval reserve officers are interested in the sea-scout program and many of the offices in the movement are filled by these men. The movement greatly appreciates what the various branches of the government are doing for them, but at the same time, it feels the government is being assisted to the extent that a great many of the sea scouts become interested in the sea and enter the government service. Certainly these scouts are offering far better officer material to the government than the average man who has never had this training.

Nobody can dispute the fact that our merchant marine is greatly in need of building up. Can't this be done more easily through a group of sea-minded men, than through the average man of today? The sea scouts of today are to be the men of tomorrow.

THE RELATION OF WAVE TO WIND

By H. A. Marmer, U. S. Coast and Geodetic Survey

THE action of the wind on the waters of the sea gives rise to problems which interest alike the physicist, the mathematician, the oceanographer, and the practical navigator. And these problems are far from having been satisfactorily solved. On their theoretical side they are of a peculiarly complex nature and on the observational side there is the difficulty that observations at sea must be made from the deck of a vessel the stability of which, especially when waves are running high, is of an altogether different nature from that of the physicist's laboratory on land.

Because of the difficulties attending the observations on the waves of the sea, individual measurements are clearly not correct to the "second decimal place." But from a number of observations statistical averages of a very helpful nature may be derived. And it is with this phase of the matter that we are here concerned.

It is clear that some time must elapse before a wind of given velocity can bring about the maximum wave development of which it is capable. That is, the duration of the wind enters as a factor in the relation between wave and wind. This factor, however, we may here disregard as being of academic rather than of practical interest. For the sea is rarely free from waves and swells. This means, therefore, that when a wind begins blowing it doesn't start from scratch, so to speak, in regard to its wave-raising capacity. Furthermore, heavy winds do not, as a rule, arise suddenly, but follow winds of lesser velocity which have blown for some time. Hence the question of the duration of the wind, in connection with waves, while interesting, is but of secondary importance. From such studies as have been made of this question, it appears that the time required for a given wind to bring about its maximum wave development is to be measured in hours, with a day or two perhaps as the upper limit.

Close to the coast the relation between wind and wave is complicated by such factors as depth of water and fetch of wind. The waves of the sea due to the wind are, however, surface waves so that it is only very close to the coast that the depth of water may be insufficient for the full development of waves.

The fetch of the wind, or the extent of open water over which it blows, is a factor that has to be reckoned with for a considerable distance from the coast, as much as 1,000 miles perhaps. The formula used to express the relation between the height of waves and the fetch of the wind is purely empirical and was derived by Thomas Stevenson in the middle of the past century. He found that the height of waves appeared to be most nearly in the ratio of the square root of their distances from the windward shore. For strong winds he found the height of the waves in feet to be 1.5 times the square root of the fetch in nautical miles. If f is the fetch in nautical miles and h the height of the waves in feet, the formula gives, $h = 1.5\sqrt{f}$.

It must be emphasized, however, that Stevenson's formula is only an approximate one. Stevenson himself found that for short distances a correction term was necessary, for the height of the waves observed under such conditions is greater than derived from the above simple formula. On the basis of this formula the heights of waves at given distances from the windward shore are as follows: 10 miles, 5 feet; 50 miles, 11 feet; 100 miles, 15 feet; 200 miles, 21 feet; 500 miles, 34 feet; 1,000 miles, 47 feet. Since in round numbers 50 feet may be taken as the highest waves found in the open sea, it follows that at distances greater than 1,000 miles the distance from the windward shore is not a factor affecting the height of waves.

In the open sea it is the strength of the wind that is the principal factor determining the height of the waves. To the navigator it is axiomatic that the stronger the

wind the higher the waves. Various empirical formulas have been derived to express the relationship between wave height and wind velocity. The most widely used formula in this country is that due to Vaughan Cornish who developed it about twenty-five years ago. This states that the height of the waves in feet is equal to the velocity of the wind in statute miles per hour divided by 2.05. That is, if h is the wave height in feet and w the velocity of the wind in miles per hour, $h=0.49\ w$.

More recent investigations make it appear that the relation between wave and wind is not one of simple arithmetical proportion as expressed in the above formula. For moderate winds the factor appears to be less than for heavy winds. But even on the assumption of simple arithmetical proportionality it appears that the factor derived by Cornish will have to be changed. In a recent study of the question Dr. Erich Zimmermann derived the formula as follows, $h=0.65\ w$. And, since this is based on later data, it may be taken as more nearly representing the true relationship. This relationship therefore may be stated as follows: the height of the waves in feet is two-thirds the velocity of the wind expressed in statute miles per hour.

Accepting the latter formula, it follows that a wind of 80 miles per hour—a hurricane—will give rise to waves approximately 50 feet in height. As a matter of fact, in a hurricane the height of the waves may be much less, for the very violence of the wind tends to reduce the height of the waves by decapitating them—blowing off the tops of the crests into the troughs. It thus frequently happens that with severe storms the highest waves occur after the wind has begun to subside.

It appears quite certain that the height of regular waves met in the open sea is not in excess of 50 feet. This figure it must be noted, however, refers to the vertical distance between crest and trough of regular waves, and not to the height attained by intersecting waves or by breaking waves. There are well-authenticated cases of such waves attaining a height of 80 feet or more. In December, 1922, the *SS. Majestic* encountered waves in the North Atlantic which competent observers estimated to be 80 to 90 feet in height. And along the coast there are records of breaking waves attaining even greater heights. The lantern of Tillamook Rock Lighthouse, off the coast of Oregon, stands 130 feet above sea level; yet in severe storms rocks carried by the waves have been hurled through the lantern glass.

To the navigator the feature next in importance to wave height is wave length. And as regards this feature it must be noted that there is no fixed relation between the height and length of a wave, such that if one is known the other can be calculated. This arises from the fact that the form of the wave varies. As a general rule, however, the higher the wave the longer it is. From the data at hand the following rough rule may be formulated. For waves up to 5 feet in height the length is about 30 times the height; waves 6–10 feet in height, have a length 23 times the height; waves 10–20 feet in height have a length about 20 times the height; waves 20–30 feet in height have a length about 17 times the height; waves higher than 30 feet have a length about 14 times the height. It must be emphasized, however, that the above relations are only rough averages and that wide variations from these figures may be noted in individual cases. Zimmermann, using the observed data on the length and height of waves derived as an average the following formula, $l=7.15\sqrt[3]{h^2}$ in which l is the length of the wave and h the height, both in feet.

From the observations made on the length of waves in the open sea, it appears that wind waves several hundred feet in length are not at all uncommon. Storm waves 500 feet or more in length have been frequently measured, and there are trustworthy measurements of waves up to 2,500 feet in length. It appears probable, however, that such extraordinarily long waves result from the interference of several waves in such a manner that one or more intervening crests become obliterated.

The relation between wave height and wind velocity was found to be expressed by the simple formula, $h=0.65\ w$. But since no simple relation between wave height and wave length exists, there can be no simple relation between the length of a wave and the velocity of the wind. Here, too, we must be satisfied with roughly approximate values. Determining the relation between the lengths of the observed waves and the velocity of the

wind Zimmermann derived the following average formula, $l=4\sqrt[4]{w^3}$ in which l is the length of the wave in feet and w is the velocity of the wind in miles per hour.

As regards the velocity of wind waves in the open sea, it can be shown from theoretical considerations that this velocity is independent of the depth of the water but depends only on the length of the wave. The appropriate formula is $v=\sqrt{gl/2\pi}$, in which v is the velocity of the wave, g the acceleration of gravity and π the ratio of the circumference of a circle to its diameter. Taking the average value of g as 32.172 feet per second, this formula becomes $v=2.26\sqrt{l}$, v being in feet per second and l in feet. Approximately, therefore, the velocity of a wave in deep water is 2.25 times the square root of its length. A wave 400 feet in length therefore travels with a velocity of about 45 feet per second or a little more than 30 miles per hour; while a wave 1,600 feet in length travels with a velocity of a little more than 60 miles per hour.

Since there is no simple relation between the velocity of the wind and the length of a wave, there is no simple relation between wind velocity and wave velocity. From observations made on waves in the open sea, it is found that, as a general rule, well-developed waves travel with a velocity somewhat less than that of the wind to which they are due. However, waves have been observed which were traveling with a velocity greater than that of the wind. This appears to be due to the fact that so long as the velocity of the wind is increasing, the wave velocity will be less than that of the wind; so soon, however, as the waves have attained their maximum height with a wind of constant velocity, the energy of the wind is expended in increasing the length of the waves, and thus their velocity, until finally their velocity becomes greater than that of the wind.

On the basis of the observations that have been made on the relation between wave velocity and wind velocity, Zimmermann derived the following average formula, $v=3.08\sqrt[3]{w^2}$, in which v is the wave velocity and w the wind velocity, both in statute miles per hour. From this formula it follows that the velocity of a wave is greater than that of the wind for wind velocities less than 29 miles per hour, and less than that of the wind for wind velocities above 29 miles per hour. Here again, it is necessary to emphasize the fact that since this formula is an average formula based on the observations to date, any conclusions based on it are necessarily of an approximate character.

It is to be noted, too, that all the formulas developed above relate to waves brought about by the wind. Occasionally a vessel will encounter one or more solitary high waves in otherwise smooth water. Such waves arise not from forces acting on the surface of the sea, as is the case with the wind waves discussed in the preceding paragraphs, but from forces acting beneath the sea. Submarine volcanic explosions, seaquakes, or other activities of the earth which result in sudden submarine displacements give rise to movements in the water which manifest themselves at the surface as waves. Such waves travel with a velocity depending on the depth of the water.

In conclusion it may be observed that the subject of waves is clearly one which can be forwarded by those who go down to the sea in ships. Observations on the length, height, and velocity of waves and their relations to the wind can be made without elaborate apparatus, the appropriate methods being described in any of the standard works on the sea.

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A THOUGHT *of mistrust leads to hesitation. A moment of it will kill the offensive spirit.*—DU PICQ

WHAT'S WRONG WITH ATHLETICS IN THE FLEET?

By Lieutenant Commander G. L. Woodruff, U. S. Navy

IN THE course of a discussion, which is part of the assignment work at the Postgraduate School, several student officers expressed opinions concerning the state of athletics in the fleet. The conditions pictured are perhaps familiar to all. The broad idea presented was that things are not all they should be. The question arose as to what to do about it. The basic idea here presented was evolved in answer to that question. The writer lays no claim to being an athlete, he wears no "N," and will undoubtedly be taken to task for approaching the sacred altar without the proper vestments. However, here's the idea.

First, let us consider for a moment, is there anything wrong with athletics in the fleet? Let me quote sections 242-244 *U. S. Fleet Regulations 1931:*

242. It is the desire of the Commander in Chief that all athletics be conducted so that the majority may participate and that participation be not limited to a few highly specialized men.

243. Commanding officers will encourage to the maximum degree, compatible with the mission of the fleet, athletics such as boat racing, swimming, football, baseball, field sports, boxing, wrestling, etc.

244. Every effort will be made to foster the spirit of clean sportsmanship and to discourage the spirit of professionalism.

Is there something wrong? What is this spirit of professionalism which is to be discouraged? Is it abroad in the fleet? Or do we merely fear that it might be there at some future date? What is professionalism?

We are all acquainted with Babe Ruth, and his high-priced slugging. Organized baseball is perhaps the best example of professionalism. But, you say, we haven't any Babe Ruths in the fleet. Haven't we? What is the difference in principle between paying a man enough money to enable him to refrain from all other gainful occupations except baseball, and relieving a man from watches so that he has nothing to worry about except that same colorful pastime? Have any of you ever heard of an athlete being excused from watches—considering his watches as stood—if he were out with the team? The man draws his pay for the duties of his rating. If he doesn't do those duties but plays baseball instead and draws his pay isn't he being paid to play? Show me the difference in principle.

We all know about players being bought, sold, exchanged, bartered, or drafted around the big leagues. Have we anything like that? Have you ever heard Dame Rumor whisper that a certain flagship was after a certain pitcher? Did you ever know of a man's being promised a rate if he would put in for a transfer to a certain ship? We develop a few stars, and they do get transferred about. Some of them are famous and correspondingly temperamental. Are they professionals? Isn't it true that certain ships get hold of, or develop, a few good athletes and build around them winning teams? Isn't it true that most of the other ships have to be forced to compete and to provide opposition for the ship with the "Iron Man?" How many ships have division teams for every division in each major sport? Why shouldn't they have? Why is it so difficult to arouse interest in a division team, boat race, or boxer?

I believe the commander in chief has recognized the trouble. There are too few people engaged in athletics. Too much of the limelight is occupied by the highly trained and specialized few. I believe we are cursed with professionalism. Too often it is that the crew are in the bleachers and a few specialists on the field. We are too keen to see a perfectly organized machine representing our ship, and by hook or by crook, we are all out to get us some of those good players. Too much honor and reward go to the ship's team—the champions of force or fleet. There is not enough incentive for bringing out divi-

sion teams. There isn't enough "sand-lot" baseball and football. Why? Isn't it interesting? Of course it is. Who will admit to being such an old fogy that he can't get a kick out of watching a couple of rival towns or rival boys' gangs battle with mask and bat and ball behind the barn at the race-track? Then why can't we get out division teams to battle in the sand-lots?

Are we in agreement that something is wrong? Or are there those who stand upon the principle that "whatever is is right"—"this is the way it's always been done?" If you come in one of these categories, drop this paper, you won't be interested. What I am proposing is not a new idea. It is merely an application to a new field of an idea which has been in use for years quite successfully. You are all familiar with the small arms trophy and the rules under which it is awarded. Hasn't the department pointed the way? Can't the same idea be applied to the award of the "Iron Man" that has been applied to the award of the small arms trophy? There can be no doubt but that the ship which gets out and does the most rifle work, does the most training of men. Incidentally, the trophy can't be kept from that ship. Points for marksmen, points for sharpshooters, experts, pistol shots, machine gunners, squad fire, interdivision matches, or any activity with small arms go toward the trophy. Why not the same with athletics? Make your qualified swimmers count for the "Iron Man." Give so many points for an interdivision match on a ship and so many points for a complete card of wrestlers and boxers at a ship's smoker. Don't make everything depend on the championship. That takes away the incentive for the second or third rater to train. If he can get one lowly point toward that "Iron Man" by hard work, he will work just as he will sweat and hold and squeeze out on the range under a broiling sun for that expert rifle qualification. Give the ship which has a lot of hard-working people—"everybody out"—a chance to make more points than the ship which has "recruited" a lot of stars.

And now comes what will probably be considered a radical idea. Make the recruiting of stars less profitable in another way. Lessen their value. Make it mandatory during the season that the team representing a ship be the champion of that ship's division teams. Legislate the picked team out of existence. You say—"Oh, but you are lowering the standard of play." Not granted! The execution of plays by those teams will not perhaps be as smooth as if we had a team picked from the entire ship's company, but won't we get more interest? If John Jones (Seaman 2 cl.) thinks he can beat that quarter back on that forward pass, won't he be more likely to come out for his division team than if he watches a perfect fifty-yard pass? He might as well be watching a movie or the "Galloping Ghost" with his team of professionals, as watching that team of selected men from the flagship gallop up and down the field. Make it possible for the smaller ships to get into the running. A team representing a destroyer or submarine could meet on more or less even terms the champion division team representing the fleet flagship. Doesn't that make for sportsmanship?

My auditors immediately objected that the same poor sports who want a winning team at any price, even the death of true sportsmanship, would be seeing to it that all the athletes got into one division. No doubt that the same sort of officer who recruits pitchers and quarter backs and champion boxers with promises of advancement would get the stars concentrated in one division if it were worth his while. Let's use the old lead pencil to strike him out. It's a poor mathematician who can't outfigure an athlete. Let's rig the rules to force mass athletics instead of championship teams.

Try this formula:

Let Sb=ship's score for baseball.

Let N=number of divisions in the ship's approved organization.

Let N'=number of division baseball teams.

Let $S1$=Division score—figured same as any league.

Games with any division team on one's own or another ship or with any regular team representing approximately the same number of men.

$$Sb=\frac{N'}{N}\times\frac{S1+S2+S5+S6+Sn}{N\times 5}$$

Any division challenged must play unless excused for cause by the immediate superior in command. Failure to accept a challenge, unless so excused, should score double against the offender, and score for the challenger simply as another game won by default.

With the mathematics of the situation forcing the formation of many teams from each ship, it will be unnecessary to have a set schedule. Let teams arrange their own games, if they play the minimum required. A schedule could be arranged but it would have to be complicated and more difficult than the fleet schedule we now have. The division and fleet athletic officers will be busy with mathematics, getting sufficient fields to play on, getting permission for teams to play in dungarees or shorts, when there is not enough gear to go around.

If you work with the formula for a moment, you will see that any ship getting out a team for each division and winning half and losing half with each team would have a score of 1.000. Figure out what happens to the ship score if a division or more are unrepresented! See if the star isn't effectively smothered in mass athletics! Put them all in one division and you are simply robbing the other divisions on your own ship. Of course a star's services will boost a ship's score, if he can win some outside games, but "Old Man Percentage" will make him look pretty small before the end of the season. When the ship's athletic officer has to look after fourteen teams instead of one, he won't have time to bother with any temperamental prima donnas. Make each team play a minimum number of games, say seven, under penalty of a zero score. The division officer would be required to certify membership of his team to the umpire for each game. Any proved lack of sportsmanship would forfeit the game and any professionalism should give that team a zero score for the season, just as though the division had not been represented at all. Using a ringer would thus be made unprofitable. Rest assured the stars would be forced to stick to their own teams, if every division in the fleet is interested in the score of every other division. It can be readily seen that the aggressive ship, the one out winning games from other ships with each division team, would at once step out in the lead of the league. I hear a remark that everybody would "pick on" a known weak team. Granted. But has it occurred to you that our purpose is to get a team out to represent every division? If a division team is weak and has a challenge for every available playing date, haven't we accomplished our purpose and got out on the field playing the most baseball the team that needs it most? And in this class of game, can't you see the biter bitten, now and again?

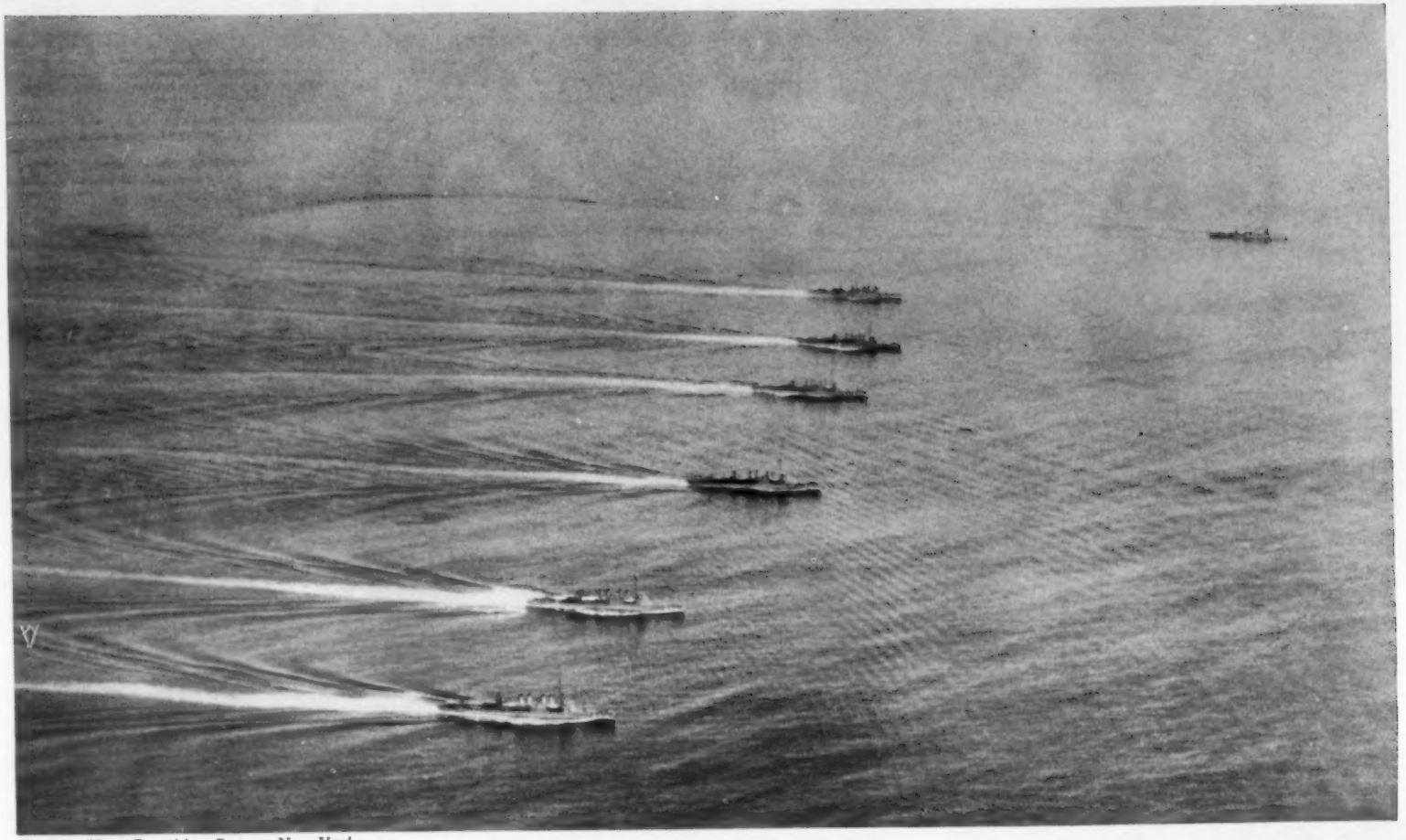
The same formula will work for any sport, even boxing and wrestling. Perhaps a division would have only three or four weights and might not be able to get bouts in its own ship, but only lack of men of the necessary poundage would excuse failure to take up a challenge. Having the ship's score in each sport, it is easy enough to weight the scores according to the number of individuals on a standard squad for that sport and combine them for the ship's aggregate or final yearly score for the "Iron Man," or whatever the symbol of athletic supremacy is chosen to be. The gunnery officer of any ship can build you a formula in five minutes. Have I convinced you that a mathematician with a good lead pencil can figure professionalism out of the picture? Very well! Let's do it! The professional is the product of our system. Let's change the system and watch the professional disappear.

Is the world's series necessary to organized baseball? Must we have intersectional games, Rose Bowl exhibitions, and other postseason games with all-American personnel and the like? Must we have some such scheme to foster interest in a sport in the fleet? Very well, if we must have them in the fleet, let them be postseason. If athletics cannot live without these picked professionals to perform for us, let us make their activities frankly an exhibition and not part of a prescribed schedule. Let there be a challenge cup for picked teams. That would afford an opportunity for the pampered pets to get out and earn the year's pay they have been drawing down while others did their work. Let them get out and show the people who stand their watches how a real hot sport can peg down to second or run through a broken field.

But as for real organized and scheduled athletics that count for standing of ships and divisions and squadrons, let us put the professional athlete back where he belongs, no favors shown him, no discrimination against him. Let him stand his own watches, and work for a rate with the rest of his division and the rest of the ship's company. Let the "Iron Man" be awarded to the ship with the highest composite score. Rig the rules so that the score represents mass athletics, not the efforts of specialists.

Courtesy Navy Recruiting Bureau, New York

DESTROYERS LAYING SMOKE SCREEN

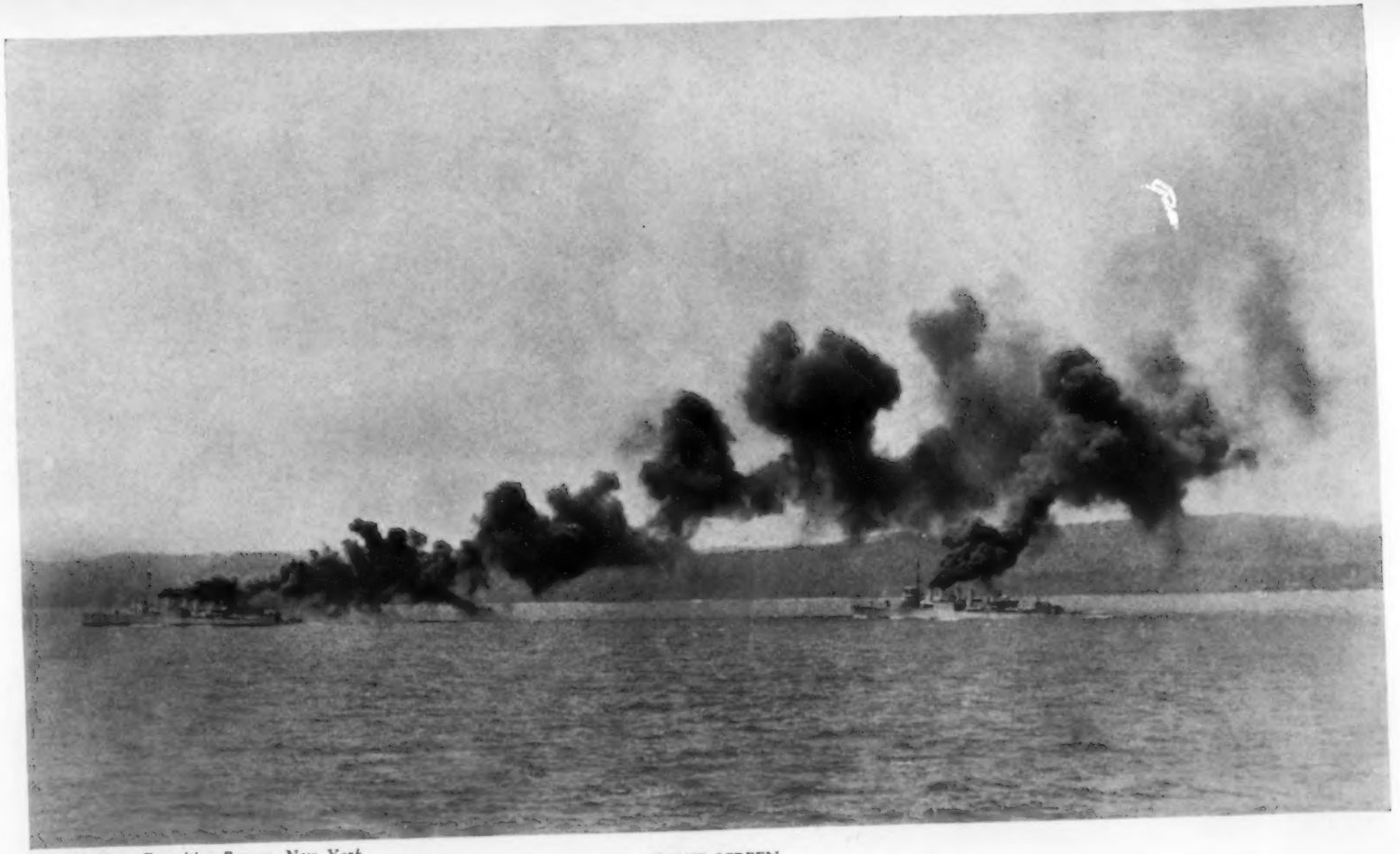


Courtesy Navy Recruiting Bureau, New York

DESTROYERS STEAMING IN FORMATION

Courtesy Navy Recruiting Bureau, New York

DESTROYERS STEAMING IN FORMATION



Courtesy Navy Recruiting Bureau, New York

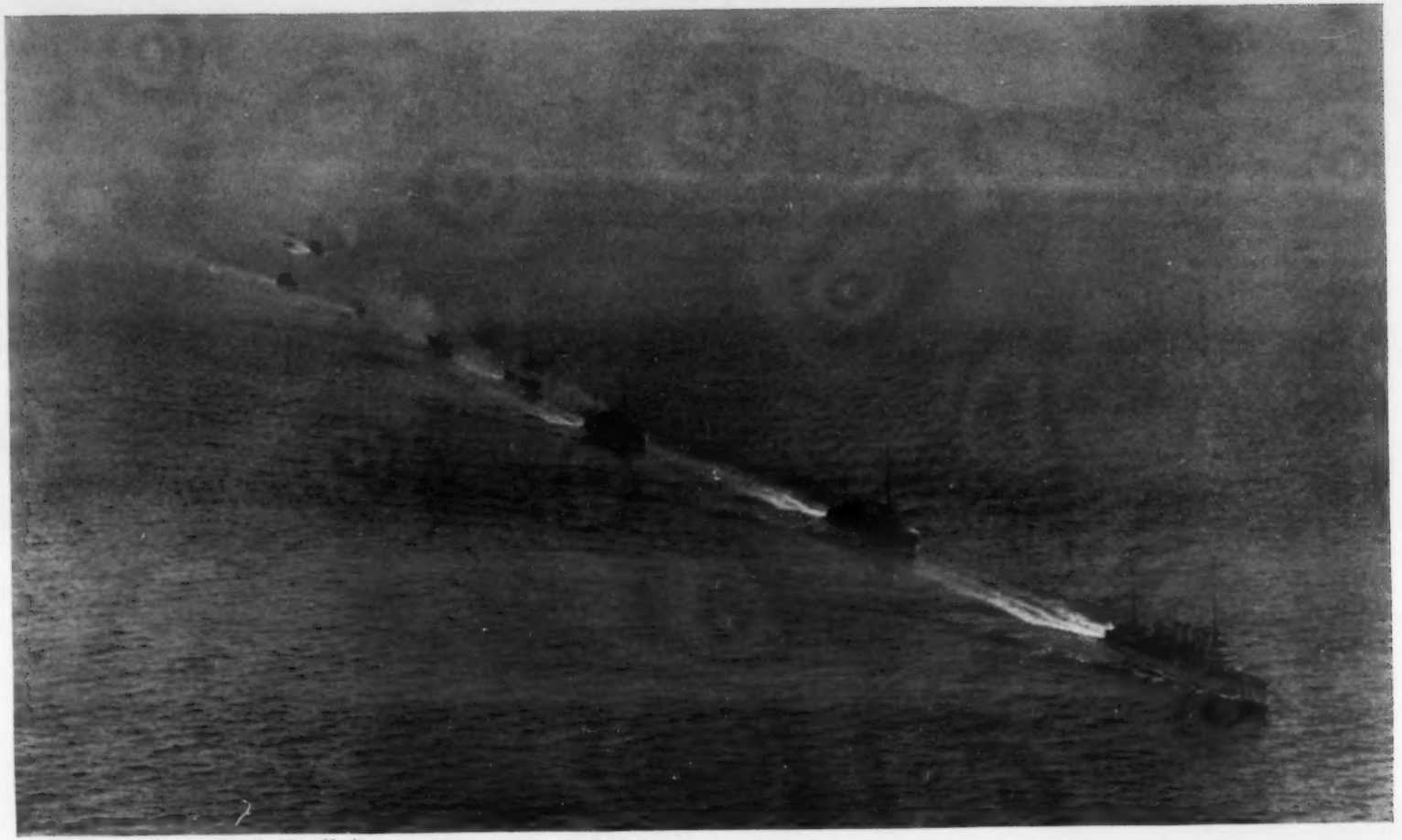
SMOKE SCREEN

Courtesy Navy Recruiting Bureau, New York

SMOKE SCREEN BEING MADE BY DESTROYER

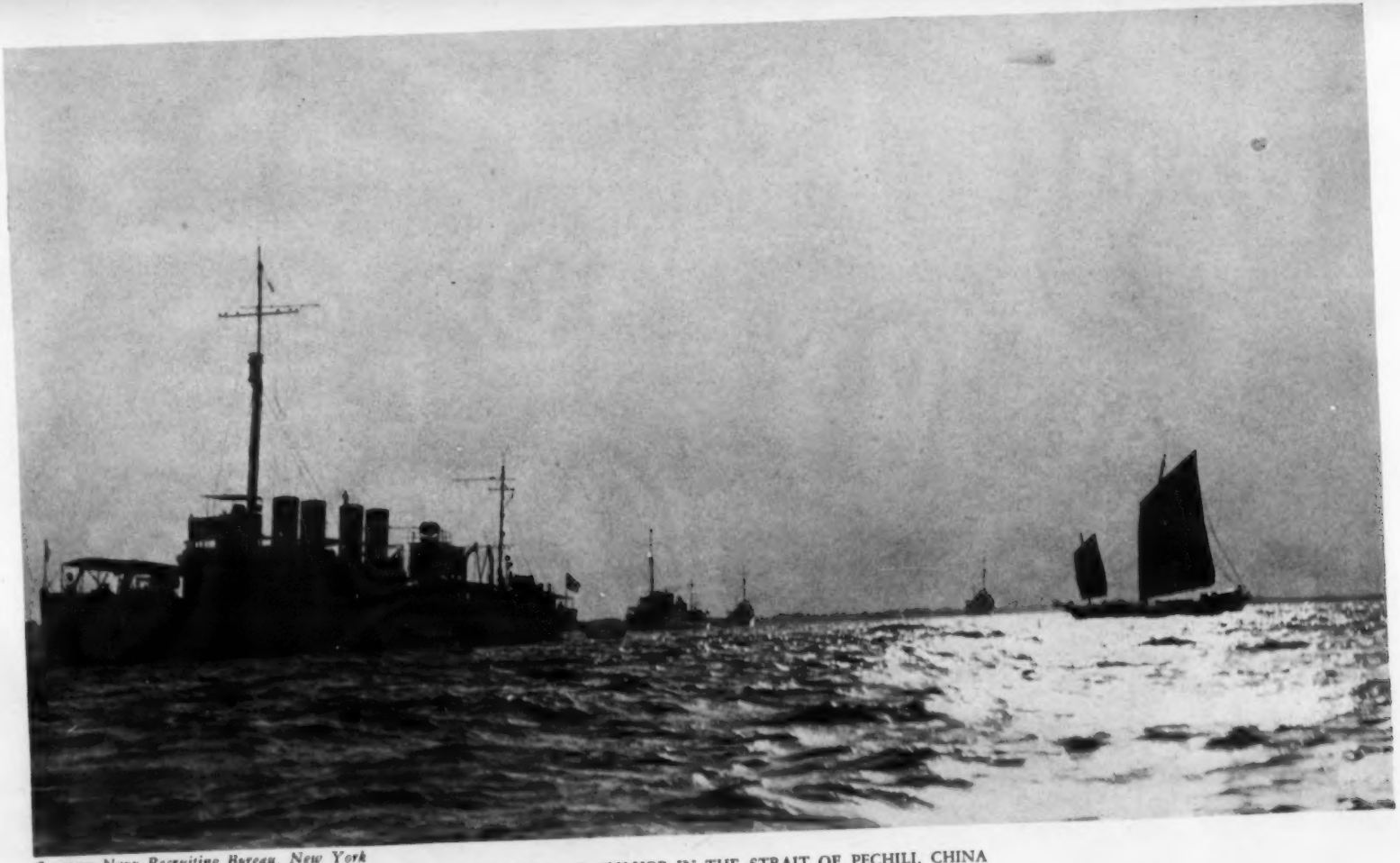
Courtesy Navy Recruiting Bureau, New York

NIGHT FIRING OF THE 5-INCH GUNS OF THE *CALIFORNIA*



Courtesy Navy Recruiting Bureau, New York

DESTROYERS STEAMING IN COLUMN



Courtesy Navy Recruiting Bureau, New York

DESTROYERS AT ANCHOR IN THE STRAIT OF PECHILI, CHINA

PLANES ON CATAPULTS ON BOARD THE *CALIFORNIA*

Courtesy Navy Recruiting Bureau, New York

DISCUSSIONS

The Merchant Naval Reserve

(See page 1187, September, 1931, PROCEEDINGS)

LIEUTENANT R. H. QUYNN, U. S. NAVY.—It is not only a commonly held theory that merchant marine officers as a class are the best possible material for immediate conversion into naval (reserve) officers in the event of war but it is also a fact that they are the best material on the whole for the purpose, the reason being that they know their ships, and know how to conduct them with safety and dispatch across the waters; they realize and discharge faithfully the heavy responsibilities reposed in them. The human lives and the valuable material in their holds are in their sole care, and merchant officers the world over have seldom failed in this trust. They know by heart the rules of the road, the safety precautions, and they do not get seasick. But why go into details? To learn how to load and fire a gun even to absorb the gunnery and ballistics connected with it ought not be much of a task for the ordinary young American merchant officer or engineer with a little help from the regulars. He already knows practical navigation and seamanship, or marine engineering of a kind, and what is infinitely more important, he knows how to stand a responsible watch on the bridge or below.

Now I want to ask: Would any of us scoff at a well-organized police force and say they would be of less immediate value to an army than a flock of untrained recruits even of college-grade intelligence? It may be a matter of opinion but the simile between the Army and the police, and the Navy and the Merchant Naval Reserve seems worth considering from more than one angle. The police and the Army protect us on land. The Navy and the Merchant Marine man our ships combatant and noncombatant, on the waters of the world. The requirements and the ultimate ends and uses are in each case different, and to convert the one of peace-time into the other of war-time use, is the problem the Navy Department on its part has undertaken to solve by creating the Naval Reserve—an important part of which is the Merchant Marine Reserve consisting of masters, mates, and engineers, to the number of some 2,400 at the present time.

Mr. Hanna's idea that merchant marine engineers need no training is fallacious, as is also that about "trick" navigation. He evidently believes what he says but he makes us wonder about his conception of seamanship in fogs, storms, the hurricane season in the tropics, and of many other things that only mature seafaring years bring the capacity to cope with successfully. Overlooked also were—turbines, Diesels, internal-combustion engines, and electric drive—which the ordinary run of marine engineer is not acquainted with. I remember a case in an oil tanker of which I was the mate. The company kept in employ two assistant engineers who were unreliable but who held their jobs because it was at that time difficult for the marine engineers association to furnish engineers who were familiar with turbine machinery. When the *Pennsylvania* and the *Virginia* were launched at Newport News shipyard the yard electrician made two trips around to the west coast to help break in the merchant marine engineers on operation and upkeep. But this is nothing unusual or even noteworthy. The American Merchant Marine is young and must be given a chance to develop. The government and Congress, through the Shipping Board, have both been doing their part as we all know.

Unfortunately the excellent officer material spoken of in the article does not come from the Navy except in a few cases. The Navy pays better, the life is easier, and the good men generally stay for their retirement after which, it is my guess, that but few of them care to go back to sea again. The farm looks better. As a statistical fact I should really like to know just how many out of our thousands of successful masters and mates in the merchant service, are former navy men. I imagine the number would be surprisingly small. The two professions unfortunately are, and have been, antagonistic. It is to be greatly regretted, also, an article like Mr. Hanna's with the statement that many such merchant officers "would make but indifferent coxswains," only aggravates matters.

As I recall in the last war, American merchant officers such as we had, even the "red-ink" men, and including all who served either in tramps, passenger ships, with the Naval Reserve Force, etc., handled their vessels exceptionally well, and lost but few of them. At the outbreak of the war I was serving on a large former German steamer *Rhaetia*, seized at Philadelphia in April, 1917; we hauled ammunition, explosives, munitions, coal, etc., from Hampton Roads, Virginia, to Italy for the Italian Army base at Genoa. We carried two 4-inch guns and a navy gun crew in charge of a chief boatswain's mate. In 1917 I was the second mate of that craft but I do not recall ever having seen the CBM of the gun crew take over command of the ship from the captain even when thrice we fired on what some lookout conceived to be a periscope. He took his orders from the master of the ship, which was right enough and proper. There was utmost coöperation and cordialty between the civilian crew, the gun crew, and their petty officers. They filled the niche that the marine sentry on a mail train in Chicago some time back filled "for protection only." No marine with a shotgun ever gave orders to the conductor, or the engineer of the locomotive, and never will, except perhaps in some Central American revolution.

The officers of the merchant marine are a body of men who are accustomed to the exercise of authority, used to the life at sea, and capable of feeling responsibility. As in the past they should furnish the best reserve-officer material for the Navy.

The First Element of Training for War

(See pages 776, June, 1931, and 1399-1401, October, 1931, PROCEEDINGS)

LIEUTENANT R. E. KRAUSE, U. S. NAVY.—After a passing compliment on my article, I find nothing but censure in the discussion of Lieutenant R. A. J. English, U. S. Navy. I hope therefore that there are other unmentioned points with which he is in agreement with me.

Careful reading of par. 2, p. 777, of subject article will show that I did not charge engineers, and in particular the west coast destroyers, with "false standards." My sole contention is with defective individual training in gunnery, engineering, and to a lesser degree in the torpedo branch.

Furthermore I did not say that ensigns one year after graduation are made chief engineers of destroyers. I quote the applicable sentence, "Perhaps a year later they may be sent to destroyers and soon are given the responsibilities of torpedo, gunnery, or engineer officers." That we have been giving such important positions as chief engineer of our destroyers to officers too early in their careers is evidenced by the fact that there has been of late a demand for more rank and consequently more experience.

It will be remembered that the engineering school-ship system was established at a period when our personnel was at a low ebb. We had many destroyers, and more being commissioned daily, but we had very few engineer officers. Under the able direction of Lieutenant Commander J. G. B. Gromer, officers were taken under instruction and trained intensively. During the day these officers had to do practical work and at night, sore and tired, write up their notebook assignments. I have had occasion to talk to many of these officers and, so far as I remember, all freely admitted that they had learned a great deal about destroyer engineering in theory and in practice. If this resulted in grave material damage to these school ships, I am not aware of it, but Lieutenant English seems to speak with intimate knowledge of the condition. I do know, however, that all the destroyers due to hard usage by inexperienced personnel suffered materially. However that may be, it should not be taken for granted that a school ship *per se* will wreck the material the students use.

During my tour of duty at the battle fleet torpedo school, we used several destroyers for our instructional firing. We lined up the torpedo battery, checked tubes and directors, helped get the air compressors in running order, etc. Not only did we leave their material in as good, or better, shape but also we know the ship personnel gathered knowledge and experience. I dare say that every commanding officer of the destroyers we used will agree that the ship benefited by our having been aboard. Numerous commanding officers asked that their destroyers be designated for this duty. Would not an engineering school ship profit likewise?

To continue the history of destroyer engineering training when the crisis had been met, the school-ship system was abandoned and another similar to that described by Lieutenant English was instituted. I was one of those who thus received his destroyer engineering training. I was given a guide for doing practical and notebook work and once a week submitted the latter for inspection. Otherwise I had little supervision and no instruction except what I gleaned from the chief engineer and leading petty officers. My time was broken up by deck watches and miscellaneous duties. All in all the course was woefully lacking—in fact, as I see it, was no course at all.

With some modification and undoubtedly much improvement this system had been handed down to the present day and Lieutenant English seems to feel that it is all that is needed. Not all will agree with him, however. Subsequent to the publication of the subject article one of the division engineer officers of the battle fleet destroyers told me that the present system of training destroyer engineer officers is unsatisfactory. He spoke of good material being wrecked by inexperienced officers. This is the school of experience—"learning while doing" as Lieutenant English says. Why is it necessary for us to gain all of our professional knowledge in the school of hard knocks? Why do we have to learn everything by bitter experience?

It is conceivable that a man might become a skillful physician without having attended medical school. He too could learn in the school of experience. He could, to begin with, dispense medicines promiscuously, study the effects, and at last find the remedy for a particular ailment. Such a suggestion we immediately brand as ridiculous, yet in a sense that is exactly what we are doing to service material. Not only is our system hard on material but it takes longer to train our officers and men and meanwhile keeps down our performance standard. Why can we not utilize the latent ability of our fine engineer, gunnery, and torpedo officers, as well as efficient leading petty officers, by giving others the benefit of their professional learning and experience?

I am a strong believer in the efficacy of an engineering school established on shore where we can assemble our talent and our students. Let the former give to the latter all the accumulated engineering knowledge of which they are capable. The length of such a course, the location of such a school, the detailed curriculum, are of small moment compared to the idea—that is what I am interested in selling. For all of these schools I advocate strongly that the practical go hand-in-hand with the theoretical. What we want is officers and men who can operate service material efficiently. Let the destroyer engineering students after a course on shore go out on a destroyer for say two weeks to get the practical operation of the plant.

Lieutenant Kirkpatrick has rightfully taken exception to a statement which I made comparing submarine and destroyer torpedomen. Of course a man can only testify to that of which he has personal knowledge. My personal knowledge in this case came from observing officers and men sent to the battle fleet torpedo school from battleships, cruisers, destroyers, submarines, and torpedo plane squadrons for instruction over a period of two years. It would have been better had I prefaced the first sentence of par. 1, p. 778, with the following clause, "judging by the men sent to the battle fleet torpedo school for instruction." It cannot be denied that I had an exceptionally good opportunity for comparing submarine and destroyer torpedomen. In fairness to all concerned, it should be said that most of our enlisted students were non-rated men, a goodly number of torpedomen third class, a few second class, and a sprinkling of first class—in other words men, for the most part, beginning their careers as torpedomen. It is these young men who particularly reflect the professional ability of their superior officers. We received men, particularly

torpedomen third class, from submarines who did not at all measure up to the standards laid down in the *Bureau of Navigation Manual.* The natural inference is that these men were rated by officers lacking the necessary training to demand high standards of proficiency.

I agree with Lieutenant Kirkpatrick that it is not necessary for an officer to go to a torpedo school to become an efficient torpedo officer. We have most capable officers in engineering, gunnery, and torpedoes and many of them have never attended a service school. Men will rise in spite of the handicaps thrust upon them. How grateful many of these officers would be if they could have had the time and opportunity to study the things they yearned for under able officers and guided by them to cover the subject systematically! But I am not thinking about developing a few experts—I am concerned with the problem of providing the many trained officers required in the fleet today in engineering, gunnery, and torpedoes. Our turn-over in officers afloat is so great that this task must not only be done thoroughly but also expeditiously. Service schools will handle this problem most efficiently.

For the Honor of the Flag

(See page 1661 this issue)

The Late REAR ADMIRAL C. W. DYSON, U. S. Navy.—I have read Admiral Snow's paper with much interest. It carries me back forty-one years to the time when, holding my commission as an assistant engineer, I was making my first cruise, serving as senior assistant on board the *Adams.*

To some of the quotation from the late Captain Smith's manuscript I must take exception.

He gives a very glowing description of the vessel's action during the trip from Apia to the threatened village and of Captain Leary's course after arriving off the village. This description is not quite accurate.

We got under way directly the *Adler* was in motion and followed her out of Apia harbor. We both cleared ship for action as we proceeded along the coast. The *Adler,* being faster than we were, arrived first off the village and anchored in the harbor which was a mere pocket in the reef, and we found her anchored when we arrived.

Captain Leary was far-and-away too smart a man to trap his slow ship with her short-range battery, one 6-inch muzzle-loading Parrot rifle on the forecastle, one 11 inch muzzle-loading smooth-bore pivot gun in the waist, and four 8-inch muzzle-loading smooth bores on each broadside, by putting her between his prospective enemy, with its high-power, long-range rifle guns, and the beach.

Instead of acting as foolishly as Captain Smith would lead one to believe, he took the wisest course possible. The *Adams* dropped anchor just outside the entrance to the reef harbor and there she lay port shutters down, guns loaded and run out, guns' crews at quarters, and the *Adler* handcuffed to a range of about 400 yards. At this range our battery fire would have been deadly, all of our round shell brushing inside the *Adler* and spreading destruction around, while the *Adler's* high-powered rifles would have sent their shot clear through us with the minimum of injury.

It did not take long for the captain of the *Adler* to realize that he had gotten himself and his ship into a very deep hole. Very shortly after receiving Captain Leary's courteous but threatening letter, the *Adler* hove up anchor and headed back for Apia, we again trailing her to her anchorage.

I had the pleasure of again serving with Captain Leary on board the *San Francisco* during the Spanish war, and I take great pleasure in stating that he was a fighting cock of the best strain without one single white feather on him.

PROFESSIONAL NOTES

OCTOBER 1 TO OCTOBER 31

UNITED STATES 1706

Some Public Utterances—Roads and Ships—Naval Holiday as a Way Out—Not All Pacifists—Armament Truce—An *Ignis Fatuus*—A Burning Question—Antique Submarines—A Defensible Frontier.

GREAT BRITAIN 1708

Cruiser Problems—Pressed Men-of-War—Why Britain Favors Small Cruisers—A Universal Trouble—Building Program—Economic War—"Straight" and "Hybrid" Cruisers—Destroyer Armament.

FRANCE 1710

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ITALY 1711

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JAPAN 1712

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RUSSIA 1714

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NAVAL NOTES 1715

MERCHANT MARINE 1717

SS. *Manhattan—Super Ile de France*—The American Merger—Various Notes.

SCIENTIFIC 1720

Geared or Electric Drive—Less Explosive Hydrogen—Ship's Stability Computer—All-Weather Sextant.

LIMITATION AND THE LEAGUE 1721

Armament Expenditures—More Armaments?—The February Conference.

AVIATION 1722

Four Hundred Miles an Hour—R.A.F. Specialist Torpedo Officers—Comparative Air Strength of the Leading Powers—The Effects of Supercharging upon Horsepower—The Sikorsky S-40 Amphibion.

UNITED STATES

Some Public Utterances

President Hoover, Washington, October 26.—

We are fortunate in having a Navy with long, high-spirited tradition. It possesses a personnel of officers and men who have never been excelled in our whole history. The nation has reason for confidence in their ability.

Secretary Adams, Baltimore, October 27.—

When we stand for an adequate Navy, we therefore stand for peace, rather than war, of which America and the rest of the world has had enough. We stand for a more certain peace than would be possible without naval armament, and for the stability of our national policies and our very essential over-seas commerce.

Congressman Britten, Washington, October 22.—

The pacifists state there is no war to come. Others tell you the world is too poor to fight. The entire world is sitting on a volcano these days. Unrest rules. Unemployment the world over, revolutions brewing and in progress. Everybody looking for trouble, *and our country is sitting on top of the world's gold supply!* What a target!

Roads and Ships

United States Daily, Washington, October 27.—Public and semipublic works contract awards amounting to $64,385,339 were reported last week. . . .

This figure included $29,870,872 worth of State highway contracts awarded in September and reported on a monthly basis. The addition of this amount brought the total of contract awards reported since December 1, 1930, to $2,655,982,592.

Marine Journal, New York, October 1. — . . . Mr. H. G. Smith, president of the National Council of American Shipbuilders . . . shows that 78 per cent of the total cost of a ship is paid directly to labor representing practically every known craft and trade employed in every state in the Union.

It follows that, if the $500,000,000 which it is proposed to spend on roads which we already have were expended upon naval vessels which we so desperately need to bring our sea defenses into condition to meet any crisis that may impend, not less than $370,000,000 would find its way into the pockets of 83,200 men in need of employment and the benefits of this work would extend to every section of the United States.

Shipbuilding makes large use of labor. Road building makes surprisingly small use of labor. In fact, the larger part of the money intended for unemployment relief would have to be expended for machinery and materials entering into road construction.

Naval Holiday as a Way Out

Wall Street Journal, September 16.—So long as all nations have idle men and confine their armament expenditures almost wholly within their own borders, a naval holiday promises them infinitely less relief from their burdens than an honestly non-political reassessment of World War obligations according to actual present capacity to pay.

Not All Pacifists

U. S. Navy Review, Washington, October 30.—

The American Coalition of Patriotic Societies is no small ally for the Navy's side. The coalition is composed of various patriotic and veterans' organizations, the following of which were represented in Washington last week, pledging their active support to a campaign for a "Treaty Navy."

(Here follow the names of 68 patriotic organizations.)

Armament Truce

United States Daily, Washington, October 31.—The United States is willing to forego increases in armaments for the period of one year beginning November 1, according to a note sent to the League of Nations October 29 and made public by the Department of State October 30.

It is the understanding of the United States that this holiday shall not affect armament already under construction and that it shall not be effective unless accepted by all other principal military powers.

The holiday does not put the United States into any inferior position as regards Japan and Great Britain, Secretary of State Stimson stated orally. He also explained that it would be possible for the United States to replace old vessels with new ones as long as the size of the American Navy at the time the arms holiday went into effect was not exceeded.

An "Ignis Fatuus"

Tribune, Chicago, October 14.—It is proposed that the United States and Great Britain come to an agreement which will make naval parity a fact without further building

and which will ease some of the debt settlement off British shoulders at a time when such relief is important to the desperate taxpayers. Briefly, the plan is that certain British ships shall be transferred to the United States Navy, balancing the tonnage as of 1932, and that credit for the price of these ships shall be entered on the British account with the American treasury.

A Burning Question

Time, New York, October 19.— . . . whether China and Japan were resorting to war as an instrument of national policy or just fighting. . . .

Antique Submarines

Tribune, Chicago, October 19.—Failure of the United States to keep pace with the other Washington naval treaty powers in the construction of new under-seas naval craft has paved the way for a rapid decline of this country as a major submarine power. . . .

During the last five years the United States has built or laid down six submarines of a total tonnage of 11,970 tons; Great Britain has laid down twenty ships of 18,539 tons; the Japanese twenty-six ships of 35,063 tons, and France seventy-four ships of 72,013 tons.

A glance at the above figures emphasizes the amazing strides taken by France and Japan in the building up of their submarine flotillas. Proof that these building programs are not flashes in the pan is shown by official world figures showing the number of ships now under contract or building. These place France still in the lead with fifty-three ships of a total tonnage of 54,027; Japan second with thirteen ships of 18,869 tons; Great Britain third with nine ships of 8,675 tons, and the United States trailing with three ships of 3,800 tons.

While the United States has no new submarines authorized or appropriated for and thus would not be able to lay down another under-seas boat in event of the pronouncement of a naval holiday as favored by the Hoover administration, both Great Britain and Japan have submarines appropriated for and ready to lay down. Britain has seven of a tonnage of 6,275 and Japan eight of 10,600 tons.

Analysis of the comparative submarine tonnage totals as well as the dates when new ships have been built or laid down by the powers reveals that without additional new building the United States will enter the next five power naval conference in 1935 or 1936 trailing all the other powers.

The tables showing the number of ships and tonnages of submarines which the major powers will have in 1936 if all vessels now building are completed, all vessels which become over age, eliminated, and no new vessels laid down indicate clearly how a naval building holiday would work to the advantage of other nations and to the disadvantage of this country. The table showing tonnages in 1936 follows:

Country	*Vessels*	*Tonnage*
United States	20	26,070
Great Britain	26	34,934
Japan	39	53,672
France	80	77,546

In event vessels now appropriated for are built, Japan's total would be raised to 63,972 in built and building ships and Great Britain's to 41,209.

Should a five-year naval building holiday be declared, a move now being investigated in Washington, no new submarines could be completed by this country before 1939, as it takes three years to complete a submarine. In that eventuality the United States would have 11,970 tons in 1939, exclusive of new ships that might be building or nearing completion; Great Britain would have 34,814 tons, Japan, 42,783, and France, 79,993.

France and Japan, having built more submarines in recent years than any of the other powers, are believed to lead the world in the quality of under-seas craft. American private builders as well as naval designers assert that the latest built American submarines equal the best built abroad. Some question exists as to whether the Diesel engines used in American craft are as good as those which power European and Japanese under-seas boats.

A Defensible Frontier

Times, New York, October 31.—(By L. F. Loree, President of the Chamber of Commerce of the State of New York.) . . . I think it was Lord Curzon who said "the problems of empire are the problems of a defensible frontier." Many explanations have been given as to how the World War was won. The one most satisfactory to me was: "It was the defense of Verdun, perhaps the most wonderful exhibition of military tenacity since the siege of Antwerp, that

won the war." It is significant that almost the first work undertaken by France in this connection was the establishment of a new frontier defense.

Where is the defensible frontier of our Pacific coast? We have fortified Pearl Harbor in Hawaii, but the mandated islands now under the oversight of Japan are five hundred miles nearer Hawaii than is San Francisco. Not only are these Pacific holdings, but the Pacific coast itself, menaced by the mandated territories of the Carolines, the Marshalls and the Mariarras, of which we hold only Guam. If we were to take title as part of the adjustment of the reparations to German Samoa and to these three Pacific groups, with proper fortifications at points intelligently selected, our defensive frontier would be impregnable. As time went on, Western Canada, New Zealand and Australia, as well as other foreign possessions in the Pacific, would come to look upon us as their natural protector against any growth of power in Asia.

It seems incredible that when we paid Spain $20,000,000 and took over Porto Rico, the Philippines and Guam, we failed to take these three groups of islands, which were subsequently sold to Germany for about $4,000,000. Then we added to this blunder, first, by permitting Japan to become a mandated power and, second, by undertaking not to prosecute fortifications. Now another opportunity seems to be approaching to secure a defensible frontier. It certainly ought not to be passed over.

We are the richest country in the world and are rapidly, from a military sense, becoming one of the weakest. We are advertising ourselves as offering an opportunity for loot that holds no comparison to anything heretofore undertaken. Are we to rely solely upon the grace of God, or are we to try and be helpful in the matter and do something of our own accord? We may well keep in mind the observation of St. Thomas Aquinas, that "men who travel much seldom become holy," and that now as never before mankind is given over to traveling.

GREAT BRITAIN

Cruiser Problems

Naval and Military Record, Plymouth, October 14.—(By Sir Herbert Russell.) Commander E. S. R. Brandt, U. S. Navy, contributes to the September number of the United States Naval Institute PROCEEDINGS an article of wide vision and clear reasoning under the title of "Treaty Cruisers. . . ."

A 6-inch gun cruiser with the same number of guns can deliver from two to three times the number of shots per minute as can an 8-inch gun cruiser. At ranges where the 6-inch can penetrate, the 6-inch cruiser will inflict the greater damage and should survive a short, hot action. No treaty cruiser could long stand up against a 6-inch gun cruiser with nine to twelve guns under such circumstances.

In short, the treaty cruiser—e.g., of 10,000 tons and carrying 8-inch guns—is supererogatory for fleet work and not worth her extra size and armament for communications control work save in the possible advantage of her considerably wider cruising endurance. This advantage, as Commander Brandt reasonably argues, is very much more real to the United States than to ourselves since our chain of bases gives our ships much superior facilities for refueling. But, apart from this point, which really does not enter into the fighting value of the vessel since a 6-inch gun ship of 10,000 tons could have even wider cruising radius, Commander Brandt is manifestly unconvinced that the treaty cruiser is "worth while." This is very interesting coming from the other side of the Atlantic. On this side a good many of us have been saying very much the same thing for a long time past. The value of the bigger gun in cruiser armament lies in outranging. Obviously an outranged ship is at hopeless odds unless she possesses such a great superiority of speed as to be able speedily to chase her opponent. But, as I have previously said, the latest type of 6-inch gun is not to be outranged within the limits of fighting visibility. Therefore the advantage of the heavier gun narrows down to its more devastating "punch." As against this, as Commander Brandt admits, the smothering fire of the 6-inch gun is likely to prove more decisive on balance. The 6-inch-gun cruiser will probably be a smaller target, but the difference in dimensions will only represent an infinitely trifling chance of immunity.

Pressed Men-of-War

The Navy, London, September.—(By Maurice Prendergast.) We can do little now, in times of peace, to prepare our merchantmen for times of war. The Americans do not appear to have got over the "Alabama

scare" yet, and they have exhibited a peculiar nervousness about the possible conversion of British liners into war vessels. . . . It is on a high degree of internal subdivision, especially below the water line, that some cruisers chiefly rely for their survival in battle. When Cramps built the SS. *Malolo* for the Matson Line, some years ago, the United States Navy Department forbade any publication of the ship's plans. It was admitted that the *Malolo* had been built with a view to future use in war time as an armed merchant cruiser, and she is said to be highly subdivided in her underbody. . . . In the matter of "protection by subdivision," the *Malolo* may be nearly as good a ship as some of the new "treaty cruisers."

Why Britain Favors Small Cruisers

Mr. F. P. Palen, in the *Marine Journal*, New York, October 1, in an article entitled "The Influence of Super-Liners on Sea Power" says:

> The Washington Naval Disarmament Treaty of 1921 and the London Naval Treaty of 1929 limited the size of cruisers to not more than 10,000-tons standard displacement.
>
> A 10,000-ton cruiser has a speed of from 32 to 33 knots, so, by limiting the size of cruisers, the conference also placed a practicable limit on the speed of cruisers, provided a proper main battery of 6-inch or 8-inch guns are mounted. This displacement limitation for cruisers has elevated the fast merchant vessel to a vastly more important position as a naval auxiliary than it occupied before the naval conference of 1921, and this is especially so at the present time, as the advance in the art of shipbuilding and the reduction of the weight of machinery per unit of power by the extended use of high temperature steam has made it possible to build fast merchant vessels of approximately the same speed as cruisers, and at the same time carry a sufficient number of passengers to meet commercial requirements.
>
> The super-liner, so-called, for North Atlantic passenger trade has a speed approaching very nearly that of the 10,000-ton cruiser of the present day. It will mount as many 6-inch guns as a 10,000-ton cruiser. It affords a higher and steadier gun platform. It is a steadier and better vessel in heavy weather. It can keep the sea for long periods of time. It has a larger cruising radius. It carries about ten times as many airplanes. It can be provided with a large airplane landing deck. It is an exceptional airplane carrier. In fact, it is a super 6-inch-gun cruiser and can successfully resist attack from all naval vessels of less strength than battleships or 8-inch-gun cruisers.

A Universal Trouble

Naval and Military Record, Plymouth, October 7.—(By A. Martingale.) The retention of redundant buildings and lands is a charge upon the Navy Vote that might be greatly reduced without impairing fleet efficiency. There are numbers of such outstations, and even playgrounds, both Admiralty and War Office, that could be released, as a casual walking inspection at most naval and military centers would reveal. The grip of both the Admiralty and the War Office, once closed over a building, or upon a piece of land, is never relaxed. Always there is some minor or major Jack-in-office whose own personal interest overrides the national.

Building Program

Naval and Military Record, Plymouth, September 23.—The statement of the new First Lord of the Admiralty (Sir Austen Chamberlain) on the subject of the naval shipbuilding program will have a reassuring effect upon the workers in the Royal Dockyards, many of whom had become more concerned about the security of their employment than about escaping the cut in their bonus. Even if all the money provided in the Navy Estimates is spent in the current financial year, there will be barely enough to keep the present staffs fully employed until the end of next March, and in the event of any considerable cuts in the new construction and refitting programs discharges would be inevitable.

The First Lord has stated, in reply to a question in the House of Commons, that there is no intention of interfering with any of the contracts already entered into. Even more significant is his assurance that the Admiralty would be very reluctant to interfere with a program which was well within the terms of the London treaty, and was fixed by the late government as the minimum which ought to be undertaken in order to put us in the position we should be in when the treaty terminated.

Economic War

Naval and Military Record, Plymouth, September 30.—(By Sir Herbert Russell.) Under the camouflage of political cordiality the civilized world is fiercely at war today. Bullion forms its bullets, paper currency its wads. . . .

If the "pound sterling" went fut, as so many of our legislators are apparently desirous that it should do, then we should not be able to pay for the food we import. Therefore, our customers would cease to

supply us. Could you want a more definite provocation to war than such a prospect? If the exporting countries declined to take our paper or our promises in exchange for their plenty we should either have to help ourselves by brute force or starve. Has such a possibility in the economic warfare occurred to our great thinkers who find something very diverting in the idea of the "flight from the pound"? With a big Navy to support them our merchantile ships might arrive in shoals at the ports of Utopia and demand to load from the bursting granaries on national promissory notes. With a big Navy in the offing, training its scintillating guns in the sunlight, we may reasonably suppose that the response would be a polite if not a cordial intimation to go ahead! Without any Navy we may not unreasonably suppose that our mercantile ships would be invited to go to the devil! Then the war would start.

"Straight" and "Hybrid" Cruisers

The Navy (organ of the Navy League), London, October.—(By Maurice Prendergast.) American naval officers have produced some interesting arguments, for and against the construction of "Flight Deck Cruisers." Lieutenant Commander Forrest Sherman, U. S. Navy, bases most of his pleadings on historical analogies.[1] . . .

Lieutenant L. A. Kniskern (C.C.), U. S. Navy, adopts a cautious attitude.[2] . . .

Lieutenant Franklin G. Percival, U. S. Navy, (Retired), has little love for the proposed new species of cruiser.[3] . . .

Commander R. K. Turner, U. S. Navy, has raised a serious objection against Lieutenant Percival's proposition that an all-gun cruiser and a mercantile aircraft carrier should work together in partnership.[4]

The above selection of opinions will show how widespread is the interest taken by American naval officers in the proposed new type of "hybrid" cruiser. We have cited the opinions of four men, and it is interesting to observe that, whilst they all favor the flight deck cruiser, they do so for differing reasons.

One (Sherman) welcomes the type for trade defence purposes; another (Kniskern) would like it as an experimental vessel; a third (Percival) accepts it in the form of a flagship; and a fourth (Turner) endorses it on its all-around merits as a cruiser. They all take it for granted that, if the new species of cruiser is built, it will be accepted without demur by foreign countries. There is a possibility of a complaint being raised that America is indulging in very sharp practice. Such complaint would be based on the score that, under the pretence of building cruisers, America was really building aircraft carriers, and so exceeding her allowance of aircraft-carrier tonnage under the rules of the Washington treaty. There has been bother enough already in European politics over the building of one form of "hybrid" war vessel, the German "pocket battleships." And there may be trouble yet if America undertakes the building of another form of "hybrid" war vessel—the flight deck or carrier cruiser. Our own view is that, if these vessels are built for the U. S. fleet, America will be only exercising her rights under the terms of the London Naval Treaty.

Destroyer Armament

From an article by Frank C. Bowen in *The Navy*, London, October.—British post-war destroyers have a battery of four 4.7-inch semi-automatic built-up guns, two 2-pounder pom-poms, and eight 21-inch tubes in quadruple mounts. French destroyers have four 5.1-inch high-velocity guns, one 2.9 anti-aircraft, and six tubes. Japanese, either six 4.7's and nine tubes or six 5.1's and six tubes. Italian either four or six 4.7's with six tubes.

FRANCE

Neighbors

Naval and Military Record, Plymouth, September 30.—For the first time since the Congress of Berlin in 1878 an official French visit is being made to the German capital.

Not Academic

Naval and Military Record, Plymouth, September 16.—(By J. B. Gautreau.) A

[1] "Some Aspects of Carrier and Cruiser Design," Nov., 1930, issue of U. S. Naval Institute PROCEEDINGS.

[2] "A Cruiser Problem," September, 1931, issue of U. S. Naval Institute PROCEEDINGS.

[3] "Elements Contributing to Aërial Superiority," Prize Essay, 1931. Published in April, 1931, issue of U. S. Naval Institute PROCEEDINGS.

[4] Discussion section, U. S. Naval Institute PROCEEDINGS, May, 1931.

country that has been invaded four times in the course of a century and that has suffered by war as France has would court suicide by confiding her safety to "scraps of paper," especially in view of the pressing demands by prolific neighbors for more land in the sun.

Official Pessimism

Times, London, September 21.—Geneva, September 20. The Italian delegation to the League Assembly has issued a *communiqué* on the naval negotiations between Italy, France, and Great Britain. It says that the proposals semi-officially made to Italy by France on the eve of the meeting of the Assembly have been attentively examined by the Italian and British governments, and that there have been consultations between Rome and London.

"The examination of the document," it continues, "has only ended during the last few days." Reports about discussions between experts at Geneva are declared to be inaccurate, and the conclusion runs:

> It is not easy to foresee if and when the Italo-Franco-British naval conversations can be resumed with any probability of a practical outcome, seeing that the latest French proposal diverges considerably from the basis of the agreement concluded on March 1, 1931.

The pessimism of the last sentence is unfortunately shared by all those who are in the closest touch with the negotiations.

Rome, September 20. There is in certain foreign quarters here a tendency to lay much emphasis on the joint action by the British and Italian governments. The *communiqué* issued by the Italian delegation in Geneva may help to dispel such exaggerated theories as are based upon messages from Geneva laying stress upon the close collaboration between Great Britain and Italy. It is obvious that Great Britain, as signatory to the March accord, and as having interpreted that accord in the same light as Italy, must of necessity have been consulted by the Italian authorities over the last French proposals.

Paris, September 20. M. Dumont, the Minister of Marine, yesterday left Cherbourg, where he has been paying a visit to the arsenal and submarine yards. During his visit, in reply to an address by the Mayor, M. Dumont said that the increasing speeds of warships and the rebirth of the German Navy might make necessary the establishment of a strong French naval force in the North Sea.

Civilian Gas Training

Times, New York, October 4.—(From Paris, September 22.) Urgent need of the organization of the civil population for its own protection in event of air war has been emphasized in a report by the French expert, Professor Jacques Parisot, as result of the recent sham air attack on Nancy, which was staged under supervision of Marshal Pétain.

Since the World War Professor Parisot has devoted himself to the study of aërochemical warfare and has visited every country of Europe. At Nancy he directed the work of the civilians who participated in the maneuvers, and in his report to the French military service he urges the creation of a permanent commission of protection, which will have branches in every city.

Already a certain amount of work has been done in France by volunteer committees, but Professor Parisot points out that the members of these committees and particularly those active in instruction would be among those eligible for active service during war. He suggests the appointment of a permanent corps of the fire department service in each town to be trained in protective methods against air and gas warfare who would be exempt from army service and would remain as a nucleus to organize measures for protection of the civil population in case of war. Their service would be supplemented by a group of army stretcher-bearers and Boy Scouts who could be summoned to service in case of need.

ITALY

Fascists for Arms Holiday

Associated Press, Rome, October 2.—Admitting that unemployment in Italy is sure to increase during the winter, the Grand Council of the Fascist party tonight declared the remedy for it to be a concrete plan for disarmament and the application of measures to deal with the problem of war debts and reparations.

The council approved the armament holiday plan submitted to the League of Na-

tions at Geneva by Foreign Minister Dino Grandi. The plan suggested a one-year holiday affecting sea, land, and air forces of every nation in the world.

Italy Grows Peaceful

Naval and Military Record, Plymouth, September 30.—(By J. B. Gautreau, Paris correspondent.) Italian diplomacy is being greatly admired here, and deservedly so. Signor Grandi's proposal for a naval truce at this stage is a piece of genius. It will meet with the approval of all professional pro-German pacifists. Let us construct no more! Money is scarce. If that instant a naval holiday were to be agreed upon Italy would enjoy the full benefit of the seven cruisers she launched last year against one for France, and the Fatherland's *Deutschlands* would reign supreme at sea.

Armament Report to the League of Nations

Times, London, September 28.—The Italian government has sent to the secretary-general of the League of Nations a statement on armaments in Italy. The statement says that, although the Italian government is empowered by law to call a large number of men to the colors, "in harmony with the principle of reduction of armaments it has restricted its Army to small dimensions." It is stated that Italy calls up less than 200,000 men for service in the Army each year.

The total of the land armed forces of Italy stationed in the home country is 462,281, including 21,174 officers, and of the land armed forces oversea 29,137, including 936 officers. The formations organized on a military basis stationed in the home country number 85,098, of whom 3,473 are officers, and those organized on a military basis oversea 4,961, of whom 102 are officers. The total of the Italian naval forces is 51,326, including 3,296 officers, of which total 12,456, including 571 officers, are organized on a military basis. The armed air forces in the home country number 21,418, and those oversea 775.

The total tonnage of the Italian Navy is returned at 404,005 metric tons, of which 87,917 tons are 4 capital ships; 105,300 tons 11 cruisers, carrying guns of more than 6.1-inch guns; and 65,423 tons 15 smaller cruisers. There are 86 destroyers, of a total of 91,701 tons, and 75 submarines, mostly of small displacement, of a total of 53,564 tons. The number of aëroplanes belonging to the land, sea, and air forces is 1,507, representing 876,847 hp. There are no airships.

JAPAN

Power of Ministers

Sun, Baltimore, October 22.—Japan has a system of government probably unparalleled in any other country in the world in that the ministers of War and the Navy may override the decisions of the Prime Minister and his cabinet and take their case direct to the Emperor.

General Minami

Japan Advertiser, Tokyo, September 29. —(By Dr. S. Washio.) The name of War Minister Jiro Minami . . . was not known to the general public . . . until the meeting of division commanders held last July when he made a startling address, in which he emphasized the gravity of the situation in Manchuria and challenged the Minseito on the question of army expenditure. . . .

Before September 21 the Foreign Office was still furtively suggesting that the Japanese troops would be withdrawn to their original places as soon as the situation became quiet and the other pending issues in Manchuria would be negotiated after such withdrawal. But here again General Minami was outspoken and definite. Such a step, he said would make the solution of the pending issues all the more difficult and render the life and property of Japanese more precarious than before. Besides, he observed, the withdrawal of troops was meaningless, since Japan had used no more force than she was entitled to by treaty rights. As to the troops sent outside the railway zone Japan has no intention to maintain them provided the security of life and property can be assured. But this brings us back to all the pending issues in Manchuria, which are the cause of unrest.

Budget Reduction

Japan Advertiser, Tokyo, September 16. —There are indications that, due to the firm stand against retrenchment by the War and Navy ministers, the government will be unable to make the 1931-32 budget balance and will have to resort to a bond issue. . . .

The Ministry of Finance is going to submit a proposal that expenses in the new budget be cut ¥122,000,000 from those in the current budget. Half this total would be

taken from the military ministries. The Army and the Navy naturally are opposed to this plan, claiming that further economies are impossible. Since 1929, they point out, expenses saved by five separate official readjustments in all ministries have totaled ¥438,000,000. Further substantial cuts, they hold, would be like getting blood from a turnip.

The Finance Ministry believes that the deficit for the coming fiscal year will be at least ¥80,000,000. This drop will be due to the gradual shrinkage of all revenues because of the business depression. In addition, the government will need money to pay officials whom it will dismiss in connection with the administrative readjustment and to increase pensions. It believes that it will need at least ¥100,000,000.

The Army and Navy clinging tightly to their present establishments, declare that further cuts are impossible. The other members of the Cabinet want to reduce the sizes of the services, especially of the Army.

Generally speaking, the budget is ready at the end of August each year. So far, nothing has been settled.

Peaceful Students

Japan Advertiser, Tokyo, October 2.—(Dispatch from Nanking, October 1.) Chinese students are rapidly fanning themselves into a white heat about Japan. This morning 10,000 students, including 2,000 who had come from Shanghai, held a mass meeting at the Chengnan School and for hours shouted their slogan, "Slaughter the Japanese."

To Less Than Zero

Japan Advertiser, Tokyo, September 19.—(From newspaper *Hochi.*) It is to be regretted that the United States has not clearly defined its attitude on the reduction of military armaments. On the occasion of the International Chamber of Commerce Conference, President Hoover disappointed the world's disarmament enthusiasts by suggesting that the United States has little intention of effecting reduction in land armament. If the United States has not changed its attitude, we cannot but recognize that it has an attitude different from those of the other powers already mentioned. The forthcoming arms parley is only five months away. It would be desirable for the United States to define its attitude on the reduction of land armaments.

Parity Demand Ignored

Japan Advertiser, Tokyo, September 27.—(Rengo dispatch from Geneva of September 25.) Very little attention is paid here to the reports published in Washington that Japan intends to demand parity with Great Britain and America in respect of naval and air strength. It has been ascertained that Japan has not taken any action in connection with the naval question at Geneva.

Naval Maneuvers

Japan Advertiser, Tokyo, September 17.—The annual naval maneuvers are scheduled to begin next Monday, September 21, and continue for seventeen days. The maneuvers will take place mainly in a section of the sea to the south of Kyushu. Among the fighting craft which will participate this year will be four battleships, six large cruisers, five smaller cruisers, two airplane carriers, twenty-eight destroyers, and four mine sweepers. In all, seventy-six vessels will participate. The maneuvers this year will be somewhat curtailed because of the government's retrenchment policy, it is said.

POLAND

Armament Report to the League of Nations

Times, London, September 23.—The Foreign Minister, M. Zaleski, on September 14 submitted, at the request of the Secretariat of the League of Nations, a statement about Polish armed forces and their equipment together with the military budget.

The Polish Navy consists of two destroyers of 3,080 tons, three submarines of 2,940 tons, two gunboats, five torpedo boats, and various other vessels. The naval personnel consists of 3,108 officers and men.

The Air Force consists of 346 airplanes for home service, and 354 for training. The Air Force personnel consists of 7,929 men, of whom 655 are professional officers and 52 reserve officers.

The Army consists of 265,980 men, of whom 17,090 are commissioned officers and 34,585 non-commissioned officers. In the budget for the financial year 1931-32 847,000,000 *zloty* was provided for the maintenance of the armed forces, of which 34,280,000 *zloty* was for the Navy, and 78,006,507 for the Air Force. M. Zaleski's statement says that no reduction in defence expenditure would be admissible unless Poland received an equivalent guarantee of security.

The political situation of Poland, the statement

continues, is such that she must reckon with the eventuality of being attacked from several sides. The length of her frontiers liable to attack is 3,986 kilometers (about 2,500 miles). Considering that the League of Nations does not dispose of an international armed force, the military situation of Poland depends on the following factors: Military power of neighboring countries; lack of fortified defences; lack of Navy; faulty communication system; unfavorable geographic conditions; total length of borders 5,536 kilometers (about 3,500 miles); unfavorable state of border; unfavorable situation of industrial centers, all of which are close to the frontiers; absence of natural defences; lack of high roads and means of communication. The present state of the Polish Army does not correspond to these requirements, which must be taken into account when Poland's position is considered at the Disarmament Conference. Poland cannot forget the example of her history, and particularly of the eighteenth century, when she fell owing to being disarmed.

Simultaneously the Polish government submitted a long memorandum beginning with a statement that Poland continues to coöperate most heartily in all the endeavors to secure world peace.

RUSSIA

Soviet Military Menace

Japan Advertiser, Tokyo, September 17.—In a recent speech before the assembly of the League of Nations in Geneva, Mr. Yoshizawa, Japan's chief delegate, declared that it was

> indispensable for certain other powers exercising influence on Japanese defense, to make equal efforts for the conclusion of the loyal execution of disarmament agreements.

Mr. Yoshizawa's statement was interpreted as signifying that Japan would reduce her armaments only in proportion to reductions actually made by Soviet Russia. . . . two years ago . . . the check given the Chinese by the Russians was not altogether unexpected. What did serve, however, as an eye opener to most onlookers was the way in which the Russians dealt with the Chinese when once they came to grips with them. As one Japanese military observer put it the world at large, and Japan in particular, saw then for the first time, with strangely mixed feelings, the extraordinary high standing of efficiency of the Red Army. The exact strength of the Soviet Army of today is unknown, but according to the most reliable information available, it appears to be somewhere in the neighborhood of 1,300,000, about one-tenth of which is said to compare favorably with the best trained and equipped soldiers in the world at the present time. Some authorities put the strength still higher, Colonel Julier, a former staff officer of the old Austro-Hungarian army, for example, contended in a recent article that the Soviet now possesses war material sufficient for an army of fully 4,000,000, well equipped with tanks, gas, and all the other latest weapons of war. True, he does not consider that the Soviet is yet in a condition to invade Europe, but he considers them fully strong enough to defeat their immediate neighbors and speaks highly of the training and morale of officers and men alike.

Nor is it only in their land forces that the Soviet appear to have an efficient and up-to-date military weapon. Their military air force is now believed to occupy fourth place among the nations of the world, with a total of some 30,000 pilots and mechanics, and it is said to be Moscow's intention to surpass both Europe and the United States in this respect within the next two years. . . .

On sea, of course, there is little cause for anyone to feel menaced by the Soviet; yet it is interesting to note that the projected second Five-Year Plan is expected to include a naval construction program providing for the building of two squadrons of four battleships each for the Baltic and Black Sea, as well as a host of smaller craft for those seas and for the Far East. Much, however, may happen before this comes about, and the important point for the present is that on land and in the air alike, the Soviet, if one is to believe the reports to hand, is increasing rapidly both in strength and efficiency. Once more, if all that one hears be true, the military threat to India from the north, which was for so long the nightmare of British statesmen and administrators prior to Japan's defeat of Russia in 1905, appears to be on the point of resurrection, while the anxiety of the Japanese military authorities regarding possible developments in the future is clearly reflected in plans for augmenting the garrisons in Korea and Kwantung and in other directions as well.

War Training

Times, London, October 14.—An alarming and potent influence upon youth is the extreme militarization of the country. A jingoistic spirit is being fostered in the Soviet Union, and the firm belief in the inevitability of the war which is to result from

the clash of the capitalistic and Communist systems leads to an intensification of war training. It is difficult to escape the atmosphere of war scare. In the theater one reads the appeal in large red and white letters: "Be prepared at any moment to defend your Socialist fatherland." In the interval between two acts of a brilliant performance in an opera house a gas mask demonstration may take place. Dominating the militarization of the Soviet Union lies the fear of foreign intervention, and its guiding principle is the quotation from Lenin:—"No revolution can last unless it can defend itself." Lenin's study of Clausewitz is today bearing fruit in the stress laid upon military science. Members of the Young Communist League are urged to be leaders in the task of spreading military knowledge. A powerful instrument for the training of the civilian population is the *Ossoaviakhim* (The Society for Aviation and Chemical Defence), which now numbers 11,000,000 members. This has numerous branches in factories and collective farms, where men and women alike receive training in shooting and in the use of gas masks. In many factories regular military exercises are obligatory for party members and for Young Communists. This keenness on preparedness for war is shared by Communists in the villages, and even peasants living thousands of miles away from the borders have received anti-gas practice. In one collective farm the church, which had been closed, was to be turned into a House of Culture, a section of which would be devoted to military purposes.

A Gigantic Program

The Soviet government has ordered tubing from the Aluminum Company of America sufficient to build 1,300 planes.

NAVAL NOTES

The following notes are taken from various sources.

United States

Names for new destroyers are: No. 348, building at Fore River, the *Farragut;* No. 349, building at Bath, the *Dewey;* No. 350, building at the New York yard, the *Hull;* No. 351, building at the Boston yard, the *Macdonough;* No. 352, building at the Puget Sound yard, the *Worden.*

The home port of the cruiser Division 3, consisting of U.S.S. *Cincinnati, Concord,* and *Omaha,* has been changed to San Diego, California, effective November 1.

The *ZRS-5,* upon which construction is to proceed, will have a capacity of six and one-half million cubic feet, which is the same as that of the U.S.S. *Akron.* The new airship's characteristics will be generally the same as those of the *Akron.* The *ZRS-5* is to cost $2,450,000, of which $1,100,000, has been appropriated to date by Congress. The contract price of the U.S.S. *Akron* was $5,375,000. The *ZRS-5* is due for delivery fifteen months after completion of the *Akron.*

Fifteen observation planes are being purchased for the Navy from the Chance Vought Corporation for $280,650.

A contract for $463,700 was awarded by the Navy Department to the Berliner-Joyce Aircraft Corporation of Baltimore for eighteen two-place observation airplanes, convertible for land or sea operation.

Great Britain

During the last week of September the keels of the cruiser *Neptune* and the flotilla leader *Duncan* were laid at the Portsmouth yard.

The engines for the cruiser *Leander,* recently launched at the Devonport yard, are being built by Vickers.

The cruiser *Orion* was laid down on the stocks at Devonport within forty hours of their being vacated by the launching of the *Leander.*

The mining tender *Nightingale,* 255 tons and 10 knots, was launched at Portsmouth on September 30.

The destroyers *Comet* and *Crusader* were launched at Portsmouth on September 30. They are the first British destroyers to be built in a government dockyard.

The destroyers *Cygnet* and *Crescent* were launched at the Vickers-Armstrongs' works at Barrow-in-Furness on September 29.

His Majesty's ship *Kempenfelt* is to be launched at the works of J. Samuel White and Co., Limited, East Cowes, on October 29. This is the flotilla leader belonging to the 1929 construction program, and Messrs. White are the contractors both for her hull and machinery. The *Kempenfelt* will be of 1,390 tons, some 60 tons heavier than the *Keith,* of the previous year's program. She is the first torpedo craft to be built at East

Cowes for the Royal Navy since the *Worcester*, of the war program, which was launched on October 24, 1919.

The submarine *Swordfish* is to be launched at the Chatham yard on November 10. This is the first of the three submarines of the 1929 program to be put afloat. She will be of 640-tons displacement on the surface, and will carry a 3-inch gun. The other vessels of the program are the *Sturgeon*, of similar type, also building at Chatham, and the *Thames*, of larger design, with a 4.7-inch gun, building by Vickers-Armstrong at Barrow.

The battleship *Marlborough* has been transferred to dockyard control at Portsmouth to be prepared for sale, after being used for certain tests with explosives. The *Marlborough* is the fourth capital ship to be scrapped in accordance with the London Naval Treaty, the others being the *Benbow*, *Emperor of India*, and *Tiger*.

The cruiser *Castor*, is under orders to reduce to extended notice in the Reserve Fleet, Devonport, where she has been serving since returning last year from the Mediterranean. The *Castor*, completed in 1915, and therefore now sixteen years old, is next on the list for scrapping. Three similar ships, the *Calliope*, *Cleopatra*, and *Carysfort*, have already been disposed of this year. One new vessel, the *Exeter*, has been passed into service, so that on balance the numerical strength in cruisers has been reduced by two, from fifty-four ships to fifty-two.

H.M.S. *Enterprise* recommissioned at Chatham for further service in the Fourth Cruiser Squadron, East Indies, where she has been serving since her completion in 1926. The ships of the Fourth Cruiser Squadron are equally distributed between the manning ports, the flagship *Effingham* being attached to Portsmouth and the *Emerald* to Devonport. The *Enterprise* is expected to leave the Nore on October 26 for her station.

The cruiser-mine layer *Adventure*, which will shortly conclude her second commission, is ordered to pay off into dockyard control at Devonport for refit. A sum of £75,868 towards this work was included in the current Navy Estimates. The *Adventure* is the only vessel in the Royal Navy specially built for laying mines, which are dropped through two large ports in the stern.

Four destroyers of the Eighth Flotilla, China, are ordered to leave Hongkong on November 27 for England. This flotilla is being withdrawn, and its place is to be taken by more modern vessels, of which the flotilla leader *Keppel* and the destroyers *Wishart*, *Whitehall*, *Wild Swan*, and *Verity* should leave their home ports on November 5 for Hongkong. The four ordered home are the *Thracian*, *Sepoy*, *Somme*, and *Stormcloud*.

In the New Year the *Dauntless* will proceed through the Straits of Magellan and cruise up the west coast of South America, making calls at Talcahuano, Valparaiso, and other ports. Towards the end of March she will proceed through the Panama Canal to Bermuda. During most of this cruise the *Dauntless* will be accompanied by the *Durban*, flying the broad pennant of Commodore R. H. O. Lane-Poole, O.B.E., recently appointed to command the South American Division.

The entire personnel of the Royal Naval Reserve, according to the latest figures available, numbered about 71,000.

It is announced in port orders at Portsmouth that one of the naval economies proposed for next year is a reduction of 10 per cent in practice ammunition and star shell for all classes of ships in full commission. Such a reduction is also urged in the present year if it can be carried out without serious dislocation of firing programs already arranged.

The First Lord stated in the House that no alteration is contemplated in the decision taken last year to postpone all expenditure at the Singapore base upon completing the equipment of the docks and for defense works.

A report has been current that the airship *R 100* will be sold to America. The position is that no such offer has been received. If such an offer were received it can be taken for granted that it would certainly have the consideration of the Air Ministry.

France

The destroyer *Frondeur* has entered service, and has been assigned to the first squadron at Toulon. She was launched June 20, 1929, and is the last of twenty-six destroyers laid down from 1922 to 1926 to be completed.

All recent French destroyers are assembled in the Mediterranean.

Names for ships of the 1930-31 program

have been assigned as follows: six destroyers are to be named, *LeFantasque, L'Audacieux, LeMalin, LeTriomphant, LeTerrible,* and *L'Indomitable;* six first-class submarines, *Agosta, Beveziers, Ouessant, Sidi-Ferruch, Sfax,* and *Casablanca;* four coast submarines, *Minerve, Junon, Vénus,* and *Iris;* one submarine mine layer, the *Perle;* one net layer, the *Gladiateur;* eight escorters, *LaBayonnaise, LaCordelière, LaPousuivante, L'Incomprise, LaMelpomene, LaFlore, LaPomone,* and *L'Iphigénie;* two 7,000-ton cruisers, *LaGalissonniere,* and the *Jean-de-Vienne.*

The submarine *Rubis,* of 679 tons and 12 knots, was launched at Toulon on September 30.

The 635-810-ton coastal submarine *Orion,* which was recently delivered by the Loire Chantiers (a noted firm that specializes in submarine work), is preparing for commissioning duties at Nantes after accomplishing at Brest a series of comprehensive trials that gave satisfaction and showed the substantial progress realized by that type of underwater craft since it was adopted by the French Navy in 1922. On the surface the speed exceeds 14.5 knots, with over 1,400 hp. Under water it approximates 10 knots, with 1,100 hp. The radius of action, gradually increased with each successive series, is well over 3,000 miles at 10 knots, whilst the armament remains effective for defensive work, as it includes eight torpedo tubes of 22-inch diameter and a 16-pounder gun and two machine guns. Four more 630-ton submarines will be ordered this year.

The 6,600-ton cadet-cruiser *Jeanne d'Arc,* is to make a six months' training cruise around South America, in the course of which the main ports of the West Indies, Brazil, Argentina, the Falklands, Chile, Peru, Columbia, and West Africa are to be visited. She will return to France at the end of March. She will have on board some 130 naval cadets and ensigns.

The new French submarine base at Cap Lay, French Indo-China, is now ready to receive the first submarines, says a message from Saigon, and these will leave France shortly. The hydroplane base will be finished at the end of the year.

Italy

A new cruiser, the *Luigi Cadorna,* was launched on September 30 at Trieste. The vessel, which was laid down in September, 1930, will have a displacement of 5,350 tons, and is expected to have a maximum speed of 37 knots. She will carry eight 6-inch guns, and accommodation will be provided for two seaplanes, which can be launched into the air by catapult.

The launching of *Luigi Cadorna* brings to five the number of Italy's 40-knot light cruisers afloat. The sister-ship *Armando Diaz* is similarly advanced and is to be launched very shortly. Two more sister-ships, *Montecocoli* and *Altendolo,* are making good progress on the stocks and could be launched before the end of the year if desired, as will be the 10,000-ton *Pola,* which belongs to the same program (1930-31) and is to be floated at Leghorn in December next. Thus Italy may launch in 1931 no fewer than five cruisers; she is in a position to do so, and that will make twelve cruisers in two years against two for France.

Japan

Noteworthy changes in the personnel of the Navy are to take effect soon, according to Japanese press accounts. As a result of the proposed changes, Vice-Admiral Seizo Kobayashi, now Vice-Minister of the Navy office, is expected to be promoted to Commander of Yokosuka Naval Base, and his place taken by Vice-Admiral Masazo Sakonji, who was a technical expert at the London Naval Conference. It is also anticipated that Admiral Eisuke Yamamoto, commander in chief of the First Squadron and the combined fleet, will be appointed member of the Supreme Military Council, and his post assumed by Admiral Mineo Osumi, chief of the Yokosuka Section.

Turkey

Two new destroyers, *Koja Tépé* and *Ada Tépé,* built for Turkey in the Ansaldo yards in Italy, arrived at Constantinople on October 18. They are of 1,350 tons, have a speed of from 38 to 40 knots, and an armament of four 4.7 guns and six torpedo tubes.

MERCHANT MARINE

SS. "Manhattan"

Nautical Gazette, New York, October 24. —The management of the United States Lines has decided to name the first of the 30,000-ton liners now under construction at the yard of the New York Shipbuilding Company, Camden, New Jersey, *Manhattan,*

while a name for the second of the two largest ships to be built in this country is still under consideration.

The date of the launching has been set for Saturday, December 5, which will be just a year from the time the keel was laid. The *Manhattan* is to enter the transatlantic service of the United States Lines next June to participate in the usual tourist exodus to Europe.

The *Manhattan* is of 30,000 gross register tons, 705 feet long, and will carry approximately 1,300 passengers, at a cruising speed of more than 20 knots. . . .

With compact, ultra-modern machinery, space actually allotted to engine-rooms has been reduced 50 per cent from that on liners built five years ago. Steam is generated in large three-drum boilers carrying 400 pounds steam pressure, with a total heating surface of 63,000 square feet, burning oil fuel with forced draft. The prime movers consist of twin-screw, Parson's-type triple-series turbines, capable of driving the ships at a normal speed of 20 knots.

The turbines have a total maximum power of 34,500 s.hp. with full nozzle and by-pass area, and a normal shaft horsepower of 30,000 with 85 per cent nozzle area. The builders guarantee .65 pound of oil per s.hp. Vessels built some years ago average from 1.21 to 1.36 pounds of oil per s.hp.

Efficiency has been greatly increased in the auxiliary machinery. Four electrical generators having a capacity of 500 kw. must each meet a guaranteed water rate of 13.5 pounds per kw. hour. Marine generators built six years ago would have a water rate of 64 pounds.

The element of safety for passengers has been a vital factor in the design of the two new 30,000-ton United States Lines ships. The *Manhattan*, first of the new liners and the largest ship ever built in America will embody every possible safeguard known to shipbuilders.

When the *Manhattan* is launched at the Camden, N.J., yard of the New York Shipbuilding Company on December 5, it will have eleven water-tight bulkheads, which will give three floodable compartments forward of the forward engine-room bulkhead. From this point aft there are two floodable compartments, inner and outer shell above the water line in the way of an auxiliary engine-room as well as an inner bottom construction for the entire length of the vessel, which is far in excess of the rules and safety requirements of the London Safety Convention of 1929.

In addition to the bulkhead floodable areas further safety is provided in the layout of the machinery spaces, making it impossible to render the vessel completely helpless.

"Super Ile de France"

Nautical Gazette, New York, October 17. —First particulars of the future flagship of the French Line, which is under construction at the Penhoet yard, Saint Nazaire, have been given in the *Journal de la Marine Marchande*. The *Super Ile de France*, as she is provisionally called, will displace about 70,000 tons, her length over all being 310 meters, and her molded breadth 35 meters. She will have twelve decks, including seven continuous decks, and three short, broad funnels. Accommodations will be provided for over 2,000 passengers, of which 800 are first-class cabins. The crew will number nearly 1,400.

The propelling machinery will be of the turbo-electric type, the *Super Ile de France* being the largest vessel in the world to be fitted with this system of propulsion. There will be four screws, and the total development of the steam turbines will be about 160,000 hp., the turbine room measuring no less than 35 by 32 meters. The boilers will be of the Penhoet water-tube type. Neither the owners nor the builders are willing to give precise indications at this stage as to the speed of the liner, but it is asserted that the journey from Havre to New York will be effected "in much less than five days."

It is too early yet to give particulars of the passenger installations, but one or two novel features may be briefly mentioned. There will be a café terrace, with a glass dancing track, on the boat deck aft. A single kitchen will be provided. It will be the largest existing on any vessel, measuring 50 by 35 m., and will be fitted with an electric range, 17 by 2 m., which will serve for passengers of all classes, and will also be the largest ever built.

The construction of the mammoth liner is progressing satisfactorily. The launching will take place in the autumn of 1932, and she is expected to undertake her maiden trip to New York in May, 1934.

The American Merger

Nautical Gazette, New York, October 17. —The news that a gigantic American shipping combine was in the process of formation took the majority of the shipping fraternity by surprise—very pleasant surprise. After constantly pounding on the need of mergers for American shipping we were most gratified to hear that consolidation of four major American shipping groups into one combine—which would be the world's fourth largest in tonnage—was far more of a possibility than a fantasy. If and when the I.M.M.-Roosevelt, Dollar, Dawson, and Chapman groups complete merger plans, no less than thirteen steamship companies and 179 ships, totaling 1,397,192 gross tons will be controlled by one American group. The only fleets larger in size are those controlled by the Royal Mail companies, the P. & O. companies, and the Hapag-N.G.L. combination.

The most significant fact is that under consolidation eleven American steamship companies owning 140 American ships would have flexible control of 1,073,321 gross tons of American-flag ships. This would still rank as the fourth largest ownership group, although the Roosevelt Steamship Company has not as yet purchased the seventeen motor ships of 108,834 gross tons which it now operates.

(Note: Contract was signed in the Shipping Board offices in Washington on October 30.)

Various Notes

Merger of Italian lines into one strong group became an accomplished fact at a joint meeting of the directors of the Navigazione Generale Italiana, Lloyd Sabaudo, and Cosulich lines, held in Milan. Combination of these lines involves a fleet of thirty-seven vessels of 412,842-tons gross register, exclusive of the superliner *Rex*, launched at Genoa recently for the N.G.I., and the superliner *Conti di Savoia*, which was launched at Trieste on October 28.

Rumor has it that an announcement may be expected shortly that the powerful Cunard and White Star lines have merged or else have entered into a working agreement similar to that of the North German Lloyd and Hamburg-American lines for the pooling of earnings and elimination of wasteful competition.

News dispatches from London give new estimates of the size of the new *Cunarder*, which is expected to be launched early next year. Her displacement is now given as 84,000 tons.

Lloyd's latest quarterly return of shipbuilding shows less tonnage under construction in Great Britain and Ireland than at any time since September 1887.

There now are fifteen large ships, each of 20,000 gross tons or more, being built throughout the world. In this type of construction the United States is leading, with six such vessels under way, while Great Britain and Ireland have four, Italy three, and France two.

Announcement has been made that the two liners of the Eastern Steamship Lines now under construction by the Newport News Shipbuilding & Dry Dock Company will be launched on January 9 and February 23, respectively. These two vessels will cost about $3,500,000 each and will have accommodations for 800 passengers. They will be the most modern vessels in the coastwise trade, and their addition to the service is expected to stimulate both passenger and cargo traffic.

The Matson liner *Monterey*, second of three ships which the Matson Navigation Company is building at a cost of $25,000,000 for service in the Pacific Coast-Australia trade, was launched October 10 at the Fore River yard of the Bethlehem Shipbuilding Company, Ltd.

The *Conte di Savoia*, 48,000-ton speed liner of the Lloyd Sabaudo Line, was launched at Trieste on October 28. She will take her place on the Naples-New York line next summer, and, with a speed of 27 knots or more, will reduce the average crossing from nine to six or six and a half days.

The Matson liner *Mariposa*, to go into service early in 1932, will have radio equipped lifeboats.

The provisional sailing itinerary just issued by the White Star Line for the first half of 1932, shows that the new motor vessel *Georgic*, which, as already announced, is to be launched on November 12 next, is to leave Liverpool on her maiden voyage for New York on Saturday, June 25, 1932.

Two famous British liners which have served their owners well have been sold for breaking-up in British yards. These are the

Demosthenes and the *Corinthic*, twenty and twenty-nine years old respectively.

At the October meeting of the board of directors of the Maritime Association of the Port of New York, a resolution was adopted to appeal to the War Department to consider the turning over of Fort Schuyler to the State of New York for use by the New York State Merchant Marine Academy as a shore base.

Sentiment in favor of a Connecticut nautical school ship for training cadets for the post of officers in the Merchant Marine was expressed at a meeting of prominent persons of Connecticut at Hartford the last week in October, and if the vessel is established it is expected it will be based at New London.

The proposed Baltimore school ship and the question of adding instruction in navigation and other nautical subjects to the curriculum at the Baltimore Polytechnic Institute was discussed at a meeting of the Propeller Club of Baltimore on October 13.

The National Standing Committee on the Merchant Marine, in its advisory capacity, advocates abolition of the Army and Navy transport system and the government-owned Panama Railroad Steamship Company. It also advocates tax exemption on American vessels trading foreign, provided such deductions be used to construction of new vessels in American yards. Its third recommendation is that restrictions be put on foreign vessels engaging in "cruises to nowhere."

To further coöperation between the United States Navy and the American Merchant Marine, the Navy Department has designated Captain John Downes, U. S. Navy, as liaison officer between the two services. This office in the Navy Department has been established for the purpose of studying the operation and management of the merchant marine so that the Navy may be well informed of the needs of merchant ships and of their personnel and that American Merchant Marine builders, managers, operators, and seagoing personnel may, in their turn, coöperate with the Navy in its task of protection.

SCIENTIFIC

Geared or Electric Drive

Mr. H. Bauer writes to the *Marine Journal*, New York, October 15, concerning the re-engining of the *New Mexico, Idaho* and *Mississippi*, that—anyone who is familiar with recent marine engineering developments and recorded performances of both electric drive and geared turbine drive on shipboard, and the Navy has numerous installations of both kinds, knows that electric drive costs more, weighs more, and is less efficient than is geared turbine drive; in fact, the estimates on performance, weight, and cost submitted in the bids on the three battleships by concerns which build both types of equipment afforded eloquent confirmation of these facts, which may be summarized as follows:

(1) The cost of equipment for electric drive was over 30 per cent higher than for geared turbine drive.

(2) The weight was more than 100 per cent greater.

(3) The efficiencies guaranteed for the geared turbine drive were better at every guaranteed point, from 40,000 hp. to 6,000 hp., with the single exception that at 40,000 hp. the bid submitted by one manufacturer for electric drive was a little over 1 per cent better than his bid for geared turbine drive. An average of the efficiencies at five different outputs shows that geared turbine drive offers approximately 3 per cent better efficiency than does electric drive.

The bids on the two types of equipment are directly comparable, as they were made for the same steam conditions and the same propeller speeds throughout; nor did cost of installation enter into the comparison, as the quotation stipulated delivery f.o.b. navy yard where the installation was to be made. Neither were any questions raised as to the practical mechanical operation of either type of equipment.

(Editor's note.—The advocates of electric drive claim superiority in plants in excess of 100,000 hp.)

Less Explosive Hydrogen

Japan Advertiser, Tokyo, September 20. —Dr. Yoshio Tanaka, who is connected with the Aëronautical Research Institute of the Tokyo Imperial University, has been on a scientific quest whose aim is the prevention of explosions of gas in lighter-than-air craft. . . . Dr. Tanaka explained to the interviewer:

By the method I have developed the danger of an explosion of gas used in a lighter-than-air craft can be reduced from one-third to one-half. This is done by adding a tiny amount of other chemicals to hydrogen, which is almost universally used as the lifting gas in such ships. The effect is to increase the amount of oxygen that has to be mixed with the hydrogen before it will explode.

Ship's Stability Computer

Herald Tribune, New York, October 10.—

An electrical device designed to solve automatically the complete mathematical problems involved in the calculation of a ship's stability was shown yesterday at the Webb Institute of Naval Architecture to a group of Eastern marine engineers and naval architects by its inventor, L. Lyell Wilson.

While the experts watched a large cross beam oscillate as with the roll of a ship, they saw the automaton, the heart of which is a small gyroscope and a pendulum, make records of metacentric height so that it could be read instantly on a meter as the degree of roll varied.

All-Weather Sextant

Times, New York, October 6.—(Dispatch from London, October 5.)

An American invention, the MacNeil all-weather sextant, designed to revolutionize navigation by sea and air, triumphed over the vagaries of English weather today.

Officials of the British Air Ministry and the Admiralty, gathered on the roof of the control tower at the Croydon Airdrome this morning, were amazed when the engineer-inventor, Paul Humphrey MacNeil of Huntington, L.I., showed how his device could accurately "shoot the sun" even when the sun is hidden behind clouds or fog.

LIMITATION AND THE LEAGUE

Armament Expenditures

Japan Advertiser, Tokyo, September 25.—The year book of the League of Nations, seventh edition just published, shows that $4,158,000,000 was spent by sixty nations on armaments in the last year.

The United States headed this list with $707,425,000. Russia came next with an expenditure of $578,943,000, France was third with $466,980,000, and Great Britain fourth with $465,255,000. With the expenditure of the British Dominions added to England's arms bill, the total for the British Empire was $726,731,065. Italy's expenditure was listed as $248,946,500, and Japan's $236,861,500. These six nations accounted for $2,704,391,000, or approximately two-thirds of the world's armaments.

More Armaments?

Naval and Military Record, Plymouth, September 30.—There has been a lull of late—at any rate, so far as the outer world is concerned—in the "conversations" between Paris and Rome and this we regard as distinctly to the good. The more each nation centers upon its own naval business, and the less it has to say in press and on platform regarding the naval business of the other, the smaller the prospect of any real rivalry in armaments. . . .

But the real significance of the comments of this French publicist lies in the reflection they seem to hold of the prospects of the approaching General Disarmament Conference at Geneva. If, in the opinion of French observers, "the world is in for more armaments," in what frame of mind are we to expect the French delegation to the League of Nations to arrive at Geneva? That there will be manifold expressions of good will and much festive cordiality we do not for a moment doubt; that there will be any business done we are frankly skeptical. It would be merely faithless to deny that there is a very wide, if suppressed, sentiment of distaste for this sort of international parochialism. The request of the council of the League of Nations for a sort of "stock-taking account" of national armaments could not but jar upon all sense of national independence. The British Navy, for instance, is the possession, the pride, and the symbol of nationalism of the British race. To have to render a detailed statement of it to a cosmopolitan junta naturally grates upon the national sense. It is not that there is any secret in the matter; indeed, if there were we might find more justification for the request. As it is, this sort of "put all your cards upon the table" demand from a bunch of very amiable and estimable foreign gentlemen prompts in the spirit of national independence an instinctive desire to retort "mind your own business! . . ." France is better able than any other power today to indulge in heavy naval expenditure if she wants to. She is likewise less inclined than any other power to "set an example" by cutting her naval expenditure. And in any gathering it is he who pays the piper that calls the tune.

The February Conference

Associated Press, Washington, October 17.—The general belief in Washington now is that ships, guns, and armies—the natural subjects for a disarmament conference—will become secondary to that of political security. The French contention has been that the political issues that necessitate large forces must be adjusted before disarmament can be attained.

Some prominent officials have even gone

so far this early in the problem as to predict that the form which a Geneva conference would take would be a group of general clauses, providing an understanding on political issues and strengthened by a "consultative" arrangement with the maximum limits of armies subscribed to in appended clauses.

The feeling here has grown recently that the active leadership among the nations represented would be shared about equally by France and the United States. Four other nations will play leading rôles. They are Great Britain, Germany, Italy, and Japan. America's delegation to the conference will be a strong one, possibly headed by Secretary Stimson himself.

AVIATION

Four Hundred Miles an Hour

Aëroplane, London, October 7.—In the late afternoon of September 29 Flight Lieutenant G. H. Stainforth, R.A.F., raised his own speed record over the 3-km. course from 379.05 m.p.h. (606.48 km.h.) to 408.8 m.p.h. (657.76 km.h.) in the supermarine *S.6B* (Rolls-Royce R engine) S.1595. He thus became the first man to handle any vehicle over a measured and timed course at 400 m.p.h.

The official figures for the first four consecutive runs over the course between Lee-on-Solent and Hill Head, Southampton Water, are as follows:

1	415.2 m.p.h.	(667.05 km.h.)
2	405.1 m.p.h.	(651.8 km.h.)
3	409.5 m.p.h.	(658.88 km.h.)
4	405.4 m.p.h.	(652.28 km.h.)

He made the fifth run as a safeguard in case his first had been doubtful but the speed for this run has not been announced.

The figure 408.8 m.p.h. is the culmination of eight months' work by the supermarine and Rolls-Royce companies which had as its primary object the winning of the Schneider trophy.

Our participation in the Schneider trophy contest was forced on us by Italy and France who challenged our right to hold the trophy after we had officially decided not to defend it and the way in which Lady Houston gave £100,000 to help to defray the cost of building up a defending team and how the supermarine and Rolls-Royce companies built the machines and engines which enabled us, on September 13, to win the trophy outright without foreign competition, and later on to raise the speed record by over 21 m.p.h., are too well-known for further repetition.

The world's speed record is made over a measured and observed course 3 km. long and the method of timing the passage of the machine over this course is by a combined photographic and electrical apparatus.

Diving before entering the course is permitted from a height which must not exceed 400 meters (1,312 ft.), but the machine must have been pulled out of its dive and be flying horizontally for 500 meters (1,640 ft.)—otherwise half a kilometer, or 3/10 of a mile—before entering the speed course.

The machine must continue in this level attitude until it has completed the course together with a further distance of 500 meters at the other end.

As the height at which the machine flies over the course is stipulated to be about 50 meters (160 ft.), the maximum vertical component of any dive made cannot be more than roughly 1,150 ft.

The course which was used both on September 13 and 29 is laid out along the northern shore of the Solent between Tichfield Haven, Lee-on-Solent, and Hill Head.

Therefore the actual line of flight for the record attempt follows a straight line extending northwest to Hythe Pier and southeast to the Spithead Forts, so that it crosses Southampton Water from Hythe to the Hamble River and then follows the Hampshire Coast.

The preparations for the new speed record attempt had been going on since September 13, when Flight Lieutenant Stainforth put up an average speed of 379.05 m.p.h. with the supermarine *S.6B,* S.1596.

This first attempt was made primarily to provide a spectacle to augment the fly-over by one machine of the Schneider trophy course and it was done with a standard *S.6B* which was standing-by in readiness to be flown over the course should the first *S.6B* and the *S.6A* have failed to do so.

This machine had a standard R engine specially prepared to stand the gruelling test of getting off the water twice with a full load of petrol and then covering the full 350 km. course. It was, in fact, an engine tuned for reliability rather than speed. The air screw was designed to give the best compromise between good take-off conditions with full load, to meet the new conditions

of the contest, and to give high speed in the air and was therefore not the best air screw for pure speed. Fuel was also used which had been specially "brewed" for reliability and low consumption—a very different fuel from that which was used for the recent speed record attempt.

All these conditions militated against the possibility of the *S.6B* giving its best performance, as only might have been expected.

Since September 13 the *S.6B* has been very slightly modified. The most noticeable external modification was the suppression of the small air scoops under the wing tips, the function of which was to ventilate the wing structure, dry up any moisture deposited inside the wings by the radiators, and to assist in the cooling by keeping the space between the upper and lower radiator surfaces cool.

The engine used was one which had been set aside for special development and had been specially tuned for speed. This engine had never been flown before but had given satisfactory results on the ground, both on the test bench and in the machine.

What modifications have been made to the engine are still unknown, but it is known that an increase of something like 300 hp. was got over the standard "Schneider" engine by engine modifications and fuel, and this is by no means the maximum increase that can be obtained from the engine or the fuel.

A number of tests were made with air screws to find one that would give the maximum speed with the boosted engine, regardless of the take-off conditions which governed the design of the air screws for the 1931 Schneider trophy contest. One of those made for the 1929 Schneider contest was found to give the best results.

The fuel used for the record presented a most interesting problem. As the specific consumption of the engine was not of great importance, as it was in the case of the Schneider trophy contest, those responsible for the fuel had the fullest scope to provide something out of the ordinary. Fuel consumption had to be limited only so far as the capacity of the fuel pumps and the pipe lines from the floats to the engine were concerned.

The make-up of the fuel was somewhat revolutionary and at the moment is confidential, although it is known that Ethyl was the basis.

The special fuel was evolved by the Ethyl Export Corporation in conjunction with Rolls-Royce, Ltd., and one understands that the fuel was responsible for an increase of something like 200 hp. over the power developed by the engine which won the Schneider trophy.

R.A.F. Specialist Torpedo Officers

Army, Navy, and Air Force Gazette, London, September 24.—An order which may be said to have a certain historical significance was issued by the Air Ministry on September 17. It provides for the constitution of a class of officers who are specialists in torpedoes, and is the natural outcome of the development of these weapons in the Royal Air Force. It is just over sixty years ago that the British Admiralty sent officers to Fiume to investigate the possibilities of Mr. Whitehead's torpedo, the first two specimens of which were brought here in 1870. The government of the day made up their minds with remarkable promptitude, bought the right of manufacture for £15,000, and stipulated, among other things, for a number of officers to be trained in the use of the new weapons. In 1872, H.M.S. *Vernon* was started as a school ship, and in 1875 she was rendered independent of H.M.S. *Excellent,* the gunnery school ship. The late Lord Fisher was among those most instrumental in starting the *Vernon* and developing the study and practice of torpedoes. He would have rejoiced to see his children taking wings in such a manner as to warrant the creation of a new specialist branch in the Air Service. The new E (T) officers in the R.A.F., although the point is not mentioned in the Air Ministry order, will apparently go to the *Vernon,* now housed on shore in the old gun wharf at Portsmouth, to complete their instruction.

Comparative Air Strength of the Leading Powers

Times, New York, October 4.—(By Leo A. Kieran) Despite recent controversies arising from the failure of a group of army bombing planes to sink the antiquated steamer *Mount Shasta,* development of the military air services is constantly progressing among the larger powers of the world and advantage is apparently being taken of the comparatively inconspicuous place given to this branch of armament at recent international conferences.

A pamphlet issued last week by Carl Byoir and associates shows the United States far behind other powers in the total strength of its air services, although far and away the leader in civil aëronautics. In a further analysis, the booklet shows that this nation is spending less than any of seven other powers in comparison with what it has to defend by air and is lowest but two in the percentage of the total military expenditures allotted to aëronautics.

The United States is woefully lacking in military aviation from the viewpoint of the aviation industry. Our services have a better record of safety and performance than those of other nations, but what we have in quality we lack in quantity, the experts say, and quantity is what is needed for adequate defense. General Hanson E. Ely, commander of the Second Corps Area, declared during this year's army air maneuvers that 2,400 airplanes would be needed to defend his territory against any such fleet as the 672 planes which participated in the war games.

With economic conditions threatening to cut expansion programs of all forms of national defense, the aviation situation is rapidly reaching a point from which it may only be resuscitated at great cost, according to leaders of the air branches of our services. The five-year program is over, but the increments involved therein will not be completed until 1933.

The Byoir booklet shows that France, which has far less territory than the United States, leads the rest of the world in number of fighting airplanes in active service. France has 1,508, Italy 1,176, Russia 1,080, the British Empire 1,070—including those in the colonies—the United States 706, and Japan 344 units. In the reserve also France outnumbers all the other powers, with 2,660 planes, whereas the average of the six other powers is less than 500. In naval aviation, however, our equipment situation is better and we lead with 776 planes, as compared to 515 in France, 492 in Japan, 312 in the naval arm of the British R.A.F., 238 in Italy, and 140 in Japan. This despite our having less tonnage in aircraft carriers than Great Britain.

But the lack of equipment is even less important, according to our military authorities, than our lack of trained military aircraft personnel. Here again France leads the world and the figures for both active and reserve pilots show France with 7,952 pilots, the United States with 4,668, the British Empire with 3,858, Italy with 3,715, Russia with 2,298, and Japan with 1,352.

The military men point out that our superabundance of commercial pilots would prove fruitful recruiting ground for reserve fliers if the necessary equipment and funds were provided for their training in military tactics. It is not sufficient, they say, that pilots be kept in training by commercial operations as such; they must also learn to take part in the intricate tactical maneuvers of combat and fleet flying.

With our airway transport mileage doubling that of any other nation at nearly 50,000 and our operations over those miles greater than those of all other nations combined, they point out that military fliers for the United States might be created without any primary training at all, the large funds necessary to that division of training being diverted to advanced courses and to the training of commercial pilots in military tactics.

From the economic standpoint, several conclusions are drawn. With national wealth computed at $406,000,000,000, the United States is to spend $82,000,000 on air defense in the next fiscal year. Thus far we have spent 69 cents per capita and 13.02 per cent of total defense expenditures on air equipment and operation, excluding the pay of the personnel. With less than a third of our wealth to be protected, Great Britain will spend $81,000,000 in air expansion and has used for military aviation thus far $1.68 per capita or 16.12 per cent of its defense appropriation.

Russia will spend $77,000,000 to protect from the air its own $80,000,000,000. That nation is listed as having apportioned 13.38 per cent of its meager defense program to aviation, and, due to the large population, the cost per capita is reduced to $.37. France, the leader in military aëronautics, which have cost her but $.65 per capita thus far at the rate of 14.94 per cent of total defense costs, will spend but $45,000,000 during the next year on aviation. The comparatively lower costs of the French are partly due to the lower cost of each unit of equipment and to a more universal advanced training given to French pilots in military aviation. Most of the commercial pilots of France are members of the reserve corps and, as such, keep their standing in the defense program of the nation.

Recent discussion of the reserve situation here showed that there is little chance under present regulations of our duplicating the details of the French system of building up its air force. Our reserves in active service periods have complained that the limitations placed on their operations have been such as to preclude any but the most primary tactical operations and that their numbers, however small, were such that the amount of time allotted each man was negligible when compared to that needed to keep them proficient and practiced in the intricacies of modern air warfare.

The Effects of Supercharging Upon Horsepower

Herald Tribune, New York, October 11. —(By C. W. Deeds, vice-president, Pratt and Whitney Aircraft Company.) Supercharging in connection with aircraft engines is being employed to a constantly increasing extent. This is particularly true in the military services, where over-all performance, consistent with a fixed standard of reliability, is the major consideration. The reason is that supercharging, from the aëronautical point of view, is a cheap method of obtaining more power, which, of course, means better performance. This added power costs little or nothing in weight and is for the airplane designer a plain case of getting something for nothing. It has taken a seemingly long time for this fundamental to be realized and it is doubtful if the full advantages of supercharging are as yet appreciated.

The case, of course, is not quite as simple as this, as there are certain definite conditions attached to its use and even slight disadvantages. One of these is the requirement for a better grade of fuel. Another is a small increase in fuel consumption, inasmuch as power must be expended in compressing the engine charge. This latter is not serious and in some individual cases a lower fuel consumption has been obtained, due to improved fuel distribution to the individual cylinders.

Both the Army and Navy are employing as standard equipment supercharged engines in the single and two-seater fighter class. It shows to advantage in this type of airplane where a maximum of performance is essential, particularly at high altitudes. It is used in the Army observation ships, and it is a safe prediction that in a short while all general military types will be so equipped. It undoubtedly has a distinct place in the bomber type, where the desire is to lift heavy loads from the ground and to carry them at high altitudes.

Commercially supercharging is already being used by several air transport companies for their altitude runs. Boeing Air Transport has been operating large passenger planes over the Rocky Mountains with supercharged engines for approximately a year with excellent results. It will undoubtedly come into wider use as fuels available for general distribution are improved. The oil companies have already done a great deal in this direction and are constantly working to raise their standards.

Generally, of course, the requirement for better fuels is caused by the increased power output from the engines owing to the use of the supercharger. However, this is not the whole story, and to understand this relationship, as well as the ultimate possibilities, it is necessary to know the fundamentals of supercharging, as well as those of aviation itself. Supercharging is in simple a process of supplying the air fuel charge to an engine under pressure, so that it is at a higher density than that of the atmosphere, which determines the density for the normal engine. The possible power output within certain limits will then be in direct proportion to this density. This same reason serves to explain the loss of power of a normal engine as the airplane ascends in altitude.

As is well known, the atmosphere grows rapidly less dense with altitude and the power drops almost in proportion, so that at 18,000 feet the power is just one-half that available on the ground. As originally conceived and developed, supercharging was designed to overcome the disadvantage of this power loss. Supercharged engines are still rated on this basis; that is, a rating of 18,000 feet means that the engine will develop its sea-level power as high as 18,000 feet, beyond which it again starts to decrease in proportion to the decrease in density.

Obviously, then, if the supercharger on an engine is used at the ground the power will be greatly in excess of the rated or unsupercharged power. This has been utilized in many cases to obtain a ground-level power greater than could otherwise be developed. The Schneider cup has been won permanently for England with supercharged engines. Supercharged engines were the only competitors in the Thompson trophy race,

won by Lowell Bayles in a GeeBee with a supercharged Wasp Junior, as well as the Bendix trophy race, which was won by Major James Doolittle in a Laird with a supercharged Wasp Junior. The airplane *Winnie Mae* of Post and Gatty was powered with a supercharged Wasp.

The supercharger is essentially an air pump and in its general application is of the centrifugal type. By turning at a high speed a small and light blower or impeller can be used. It can be driven both directly by the engine through gears, or by an exhaust gas turbine which utilizes the heat still in the charge when it leaves the cylinders. The former method is in almost universal use and is one of the factors which has made the air-cooled radial engine so predominant. Because of its structural form the distribution of the air fuel mixture to the cylinders of a radial engine is considerably more difficult than in the in line or vee type. The use of a "rotary distributor" not only solves this problem quite simply but also fits in compactly with the engine form. Making the "rotary distributer" a supercharger impeller is an obvious step, so that supercharging in various degrees is obtained by merely changing the driving gear ratios and involves no increase in weight. On the contrary, the in line or vee engine requires the addition of the weight of all the necessary parts to the normal engine weight.

The Sikorsky S-40 Amphibion

Aviation, New York, October.—The Sikorsky S-40 is a high-wing monoplane amphibion of the same general type as the well-known S-41, which is characterized by the carrying of the tail surfaces on a pair of out-riggers. Four Pratt and Whitney direct-drive Hornet engines of 575 hp. each mounted as tractors in nacelles hung below and forward of the leading edge of the wing furnish the power. A single vee-bottom hull containing all accommodations for passengers and crew is supported below the wing, and a pair of outboard wing floats lend stability on the water. Fully retracting landing wheels and tail wheel have been provided, but the machine may be flown as a flying boat with considerable improvement in performance, and with some 1800 lb. of additional payload available. Rigged as an amphibion, the expected net weight empty is 21,500 lb. which, with a designed gross loading of 34,000 lb., allows some 12,500 lb. for useful load. On the basis of the gross weight, the wing loading is then 18.2 lb. per sq. ft. and the power loading 14.8 lb. per hp. With accommodations for 24 passengers the S-40 is expected to have a range of approximately 950 miles, and with the maximum load of 40 passengers, a useful range of about 500 miles. On test flights with full load the machine has attained a high speed of better than 130 m.p.h., cruises at 110 to 115 m.p.h., and lands at approximately 65 m.p.h. A rate of climb of 712 ft. per min. was obtained, and an absolute ceiling of 13,500 ft. is predicted. A ceiling of 6,500 ft. has been reached with full load on three engines, and level flight at 2,000 ft. has been maintained on two engines with a gross loading of 29,000 lb. With 34,000 lb. gross the plane attained an altitude of 5,250 ft. in 10 min. Engineering tests on the S-40 rigged as an amphibion and carrying full load were satisfactorily completed by September 1, and it is expected that the first machine will be ready for delivery to the Pan-American Airways some time before October 1.

NOTES ON INTERNATIONAL AFFAIRS

From October 3 to November 3

Prepared by Professor Allan Westcott, U. S. Naval Academy

THE MANCHURIAN CRISIS

Review of Events in October.—The work of the League Council, again meeting October 13-24 in an effort to settle the Manchurian crisis, left matters very much as they were. China, in the hope of league assistance, was doubtless restrained from declaring a state of war. Meantime the movements for puppet governments in Manchuria were developing, Japan strengthened her control, and at the beginning of November there were reports of further movement of Japanese forces northward and westward. As a necessary preliminary to any estimate of the situation, including the efforts of the league to meet its first serious test, and the part taken by the United States in coöperation with the league and under the Pact of Paris, a chronological summary is here attempted covering developments during October, with omission of many of the uncertain reports of clashes between Chinese and Japanese forces.

October 8.—Twelve Japanese planes engage in two-hour bombardment of Chingchow, base of Marshal Chang Hsueh-liang on the Peiping-Mukden Railway southwest of Mukden, emphasizing the purpose of Japan to prevent Chang's return to Manchuria.

Japan protests to China against boycott and anti-Japanese agitation, holding China responsible for injury to Japanese life or property.

October 9.—Note from the United States to the League of Nations approving its course and stating that "it is most desirable that the league . . . assert all the pressure and authority within its competence," with promises of coöperation "acting independently through [American] diplomatic representatives."

October 12.—President Chiang declares that if the league fails her, China "will not hesitate to make the supreme sacrifice, bankrupting the country for half a century, by going to war. . . ."

Secretary Stimson notifies Consul General Gilbert at Geneva that he is authorized to attend League Council sessions for consultative purposes, if invited.

October 13.—League Council meets under presidency of Foreign Minister Briand of France, and hears statements from Chinese representative Alfred Sze and Japanese delegate Kenkichi Yoshizawa.

Reports of further bombardment of Chinese troop trains by Japanese aircraft.

China replies to Japanese protest of October 8, declaring that she does not sponsor anti-Japanese measures, but is unable to interfere with the patriotic impulses of the Chinese people.

October 14.—Council, in secret session without Chinese and Japanese delegates, decides to invite the United States to participate in its sessions as a signatory of the Pact of Paris, but awaits opinions of Japan and China.

Chinese minister at Tokio ends conversations with Japan, and is ordered by his government not to continue direct negotiations without further instructions.

October 15.—Council votes 13-1 in favor of inviting United States; Japanese delegate opposed and questions right of council to act without a unanimous vote.

In view of lawlessness and banditry in Manchuria, Japan extends area of military occupation.

Chinese forces move northward into Hupeh and Honan.

October 16.—American representative, Consul General Gilbert, joins council as observer and auditor only.

October 17.—Members of council and American delegate agree that each of twelve nations represented will remind China and Japan of their obligations under the Pact of Paris (Kellogg-Briand treaty).

October 18.—Sharp note from Japan to council requesting information as to decision on legal points raised in protest against American participation.

Japanese government stands firmly against withdrawal of troops prior to negotiations with China.

October 19.—Japan withdraws objection to presence of American delegate in the council, while reserving views on legal points involved.

October 20.—As agreed on October 17, United States sends notes to Japan and China on their obligations under Pact of Paris. Other nations represented in the council take similar action.

October 21.—Japan reported willing to modify railroad demands; insists chiefly on recognition by China of all treaty obligations. Replies to notes of powers declaring she has no thought of war.

October 22.—Japan presents verbally—though not formally—five essential conditions to a settlement, as follows: (1) Mutual repudiation of an aggressive policy and conduct. (2) Respect for China's territorial integrity. (3) Complete suppression of all organized movements interfering with the freedom of trade and stirring up international hatred. (4) Effective protection throughout Manchuria of all peaceful pursuits undertaken by Japanese subjects. (5) Respect for the treaty rights of Japan in Manchuria.

October 23.—Japan continues to block council action by declining to promise withdrawal of troops by November 16, while China declines direct negotiations without withdrawal.

October 24.—Acting under art. XI of Covenant, council by vote of 13-1 approves a resolution "recommending" that Japan withdraw troops from illegally occupied areas before November 16, which is set as date for next session of council.

October 27-31.—Friction between Japan and Soviet Republic over alleged Soviet concentration of troops on Manchurian frontiers and movement of Japanese northward and westward in Manchuria.

MOVES FOR UNITED CHINA.—The reconciliation of the Nanking and Canton governments in China, given initial impetus by the break with Japan, made no great progress during October. Delegations from each government conferred at Shanghai, and it was reported that Foreign Minister Eugene Chen of Canton was acting on the committee handling Chinese foreign policy. The Shanghai delegates agreed on a resolution at the close of the month condemning Nanking's policy of non-resistance.

UNITED STATES AND EUROPE

PREMIER LAVAL IN WASHINGTON.—Marked by no untoward events, the weekend visit of Premier Laval of France to the United States, October 21-25, unquestionably brought the two countries to a better understanding on outstanding international problems. The premier was accompanied by his daughter and a staff of eight advisers, all but three of whom were experts in economics and finance. Prior to his conversations with President Hoover, it was explicitly stated that they would be confined to "policies to expedite recovery from the world economic depression." In this field the political leaders of the two countries on which economic recovery chiefly depends saw most nearly eye to eye, and could work together most effectively. In the official summary of the conferences, given below, it is evident that the references to decisions on arms limitation are somewhat vague, and that the points of chief interest are economic—definite recognition that "prior to the expiration of the Hoover year of postponement some agreement regarding international debts may be necessary," and agreement on maintenance of the gold standard in both countries.

There were minor accomplishments, such as tentative arrangements for French purchases of American cotton and measures to check the flow of gold from the United States to France. And, from the French point of view, Premier Laval upon his return indicated (1) that France remains mistress of her security, as long as effective means are not found for organizing a lasting

peace; (2) France obtained in Washington a return to the procedure of the Young Plan at the end of the Hoover moratorium; (3) there was agreement on a new arrangement of international debts, although the means have not yet been definitely fixed; (4) there was agreement regarding the means of continuing reparations payments which will take into account the present period of economic depression. The official summary of the conversations was in its essential part as follows:

> We canvassed the economic situation in the world, the trends in international relations bearing upon it; problems of the forthcoming conference for limitation and reduction of armaments; the effect of the depression on payments under intergovernmental debts; the stabilization of international exchanges and other financial and economic subjects.
>
> An informal and cordial discussion has served to outline with greater precision the nature of the problems. It has not been the purpose of either of us to engage in commitments binding our governments, but rather, through development of fact, to enable each country to act more effectively in its own field.
>
> It is our joint purpose that the conference for limitation of armaments will not fail to take advantage of the great opportunity which presents itself, and that it will be capable of meeting what is in reality its true mission—that is, the organization of firm foundation of permanent peace.
>
> So far as intergovernmental obligations are concerned, we recognize that prior to the expiration of the Hoover year of postponement some agreement regarding them may be necessary covering the period of business depression, as to the terms and conditions of which the two governments make all reservations. The initiative in this matter should be taken at an early date by the European powers principally concerned within the framework of the agreements existing prior to July 1, 1931.
>
> Our especial emphasis has been upon the more important means through which the efforts of our governments could be exerted toward restoration of economic stability and confidence.
>
> Particularly we are convinced of the importance of monetary stability as an essential factor in the restoration of normal economic life in the world, in which the maintenance of the gold standard in France and the United States will serve as a major influence.

ANOTHER DEBT CONFERENCE.—Initiative in the matter of new debt arrangements was left to "the European powers chiefly concerned." It was expected that Germany would take this initiative as soon as opportunity could be had for consultation with France, which might be offered with the first meeting of the Franco-German Economic Commission early in November. Premier Laval upon his return spoke of another debt and reparations conference, to be held probably at Biarritz.

SENATOR BORAH ON EUROPE.—Seizing the occasion of the French Premier's visit in Washington, Senator Borah, chairman of the Senate Committee on Foreign Relations, expressed in a newspaper interview on October 23 a number of unexpected opinions on European problems. He declared for the first time in favor of complete cancellation of inter-allied debts, provided German reparations were also wiped out. He added that he would not make this contingent on arms reduction promises on the part of France or other European powers. Of her security, he said, France was her own judge and entitled to act accordingly. He favored revision of the peace treaties, citing the Danzig Corridor and reduction of Hungary as specific arrangements calling for modification. Asked his opinion on these pronouncements, Premier Laval limited his endorsement to the recognition given of France's "right to reparations and regarding security."

ITALIAN MINISTER'S VISIT TO AMERICA.—It was definitely announced on October 11 that Foreign Minister Dino Grandi of Italy had accepted the invitation of the American State Department to come to this country, and that he would sail from Naples November 7 for a ten-day visit. Italy, like Germany, sees much to gain in a strong present stand for arms reduction, the trend of her policy in this direction being evident not only in Italo-German coöperation but also in Premier Mussolini's unwontedly pacific tone in his recent Naples address and Signor Grandi's responsibility for the arms truce proposal. Hence it was expected that the chief topic for conferences during the Italian minister's stay in Washington would be plans for the success of the February arms conference, and that he would fall in with President Hoover's idea of reduced European expenditures.

ARMS TRUCE REPLIES.—At the close of October Secretary Stimson replied favorably to the league inquiry regarding the attitude of the United States on the one-year holiday in armaments proposed by Italy at the league meeting in September, but conditioned our acceptance on favorable action by the other important powers. On November

2, the league Secretariat had received similar replies from thirty-six of the sixty-four nations to whom inquiries were sent, and there seemed every likelihood that the proposal would be adopted. It will apply only to new building, not to work already under way or for which contracts have been made.

LATIN AMERICA

MONTERO ELECTED CHILEAN PRESIDENT.—Following a campaign in which the right and center parties and in general the capitalistic elements in Chile were arrayed against the lower classes and radicals, Dr. Juan Montero, candidate of the former groups, was elected president early in October by a decisive majority. It was expected that the new chief executive would follow up the policies of economic reconstruction begun by the civilian cabinet which replaced the Ibanez government last July.

MEXICAN CABINET CHANGES.—An unexpected reorganization of the Mexican cabinet occurred on October 13, when the four ministers of Commerce, War, Interior, and Agriculture resigned, and shortly afterward the entire cabinet. Former President Calles, who had declared he would not reenter politics except in a national crisis, took over General Amaro's former post as Minister of War. "Public unrest" was given as the cause of the upset, and there were rumors of a threatened military uprising connected with the name of General Amaro, supposedly one of the least self-seeking of General Calles' followers.

RENEWED TROUBLE IN THE CHACO.—In reply to appeals from nineteen states in the Pan-American Union, the first instance of such united action, both Bolivia and Paraguay finally consented to send representatives to Washington on November 11 for negotiation of a non-aggressive pact, pending a final settlement of the Chaco boundary dispute. There had been renewed clashes in the region, and militant elements in both countries had hampered favorable government action. In Paraguay on October 23 there were riots in protest against the government's policy, which were followed by the resignation of President Guggiari and the formation of a new government, with some changes, under Provisional President Emiliano Navero. The neutral nations which will take part in the renewed effort to settle the dispute are Colombia, Cuba, Mexico, the United States, and Uruguay.

BRITISH COMMONWEALTHS

CONSERVATIVE SWEEP IN ENGLAND.—The British parliamentary elections of October 27 resulted in an overwhelming victory for the parties supporting the government headed by Premier MacDonald, and in particular for the Conservatives, who secured 472 seats out of a total of 615. The premier himself won his contest in the Seaham district by a 6,000 majority. Labor leader Arthur Henderson was defeated by Rear Admiral Gordon Campell in a hitherto safe Labor constituency. The total vote was about 14,500,000 for the government to 7,000,000 in opposition, though the majority in the House of Commons is relatively greater—in fact no such majority has existed in the last hundred years. The English press emphasized the difficulties which Premier MacDonald would face in limiting Tory control of his new cabinet and in restraining the more radical wing of the party from pushing through at once a high tariff and other measures of their party program. In his own manifesto before the election Mr. MacDonald called for "a free hand to consider every proposal likely to help government stability, such as tariffs, temporary expansion of exports, and contraction of imports, commercial treaties, and economic arrangements with the dominions. . . ." Figures of the election results as given out on November 1, with only two districts unreported, were as follows:

Conservatives	472
National Liberals	67
National Laborites	13
Independent	6
Opposition Labor	50
Lloyd George Liberals	5

The King's speech to the new parliament was set for November 10, but the introduction of the government's tariff measures was not expected until the first of next year. Meantime steps will be taken to prevent dumping of foreign goods in anticipation of higher duties. It is also considered likely that the imperial trade conference, scheduled to meet in Ottawa last year but not held, will now take place next summer.

INDIA CONFERENCE.—In the midst of the election turmoil in England the all-India

conference moved slowly, making no progress whatever toward a solution of the Moslem-Hindu conflict over representation in the new parliament. Nor was there much prospect that such a solution could be reached in the brief period during which the delegates might be held in London after the elections. In the field of finance a step forward was taken by the appointment of a special committee to consider the financial relation of the Native States to the new federation, and another committee to deal with a classification of the Indian debts prior to reorganization.

GERMANY

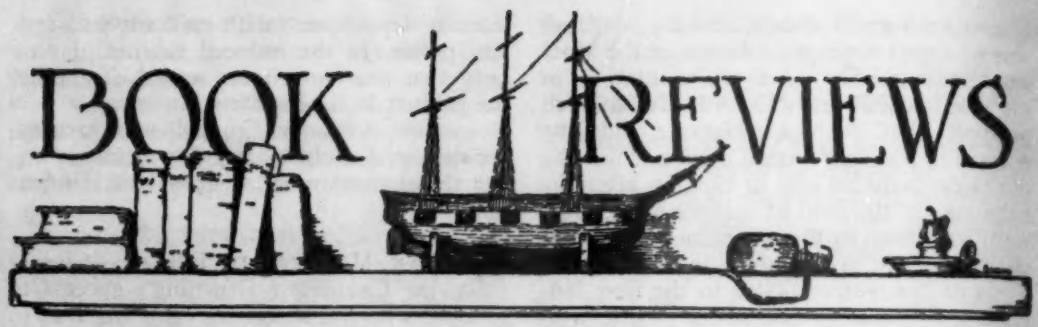
BRUENING GIVEN FREE HAND.—With a reorganized non-party cabinet Chancellor Bruening again faced in October strongly organized opposition in the Reichstag, defeated on October 16 a "no confidence" motion by the narrow margin of 295-270, and upon the subsequent adjournment of the Reichstag until February 23 was left once more free to continue his program of economic reforms without parliamentary interference. The government majority was secured by 140 socialist votes combined with those of most of the middle parties. Following the decision, the Hitlerite deputies flocked out of the chamber. At a previous meeting of opposition parties held at Bad Harzburg on October 11, the National Socialist (Nazi) followers of Hitler and the Nationalists led by Alfred Hugenberg, along with the smaller Peasant League party, had pledged united action against Bruening; and before the vote in the Reichstag, the chances were held even that the government would fall.

Bruening's new cabinet is designed as a non-partisan body composed chiefly of men without strong party alignments. The chancellor himself took over the Ministry of Foreign Affairs made vacant by the resignation of Dr. Julius Curtius on October 6. To General Wilhelm Groener, trusted Minister of Defense, was added administration of the interior department, with its control of federal police. In the reduced cabinet of nine only two new men were added. To assist the cabinet in its economic measures a new Economic Advisory Council was created, consisting of about twenty-five members under the chairmanship of President Hindenburg.

ITALIAN MINISTER IN BERLIN.—Closely following Chancellor Bruening's successful grapple with the Reichstag came the visit to Berlin, October 25-26, of Foreign Minister Dino Grandi of Italy, as personal representative of Premier Mussolini to repay the visit of German ministers in Rome last July. Reports indicated that the ensuing conversations strengthened Italo-German coöperation in regard to armament limitation, as well as in the matter of reparations adjustments and other measures to promote economic recovery. Some progress was also made in improving trade relations between the two countries.

SPAIN

SEPARATION OF CHURCH AND STATE.—Ending the long union of church and state in Spain, the National Assembly on October 13 adopted by a vote of 287 to 41 art. III of the new constitution, which reads, "No state religion exists." This action brought about the resignation of Provisional President Zamora, who had made every effort to secure more moderate handling of the problem, and his succession by Manuel Azana, former Minister of War. In continuance of its policy, the Assembly subsequently adopted art. XXV of the new constitution guaranteeing freedom of religion, and another clause providing that primary education shall be free, public, and non-religious. In the political field, clauses were approved which provide for a parliament of one chamber and a president elected for six years with broad powers, to be chosen by an electoral college based on universal suffrage in joint session with an equal number from the Cortes.



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LE COMMANDEMENT NAVAL EN MEDITERRANÉE. By Capitaine de Vaisseau Adolphe Laurens. Paris: Payout. 1931. 30 fr.

REVIEWED BY COMMANDER A. T. BEAUREGARD, U. S. NAVY.

This book is the history of the supreme command in the Mediterranean, which was given by agreement soon after the beginning of the World War to the French. It is the story of that command with emphasis upon the vicissitudes of that office rather than naval operations, and shows the inherent difficulties in a coalition.

The book deals with controversies, defects in organization, lack of liaison between the foreign office and the ministry of marine, the political inexperience of naval commanders, the difficulties in commanding allied forces—all of which the author points out in the interest of seeking improvement in the future. There are in addition many interesting narratives, including the events connected with the escape of the *Goeben* and the *Breslau;* the Dardanelles expedition; the allied activities in Greece in connection with the abdication of King Constantine; and the events connected with the Turkish and the Austrian armistices.

The author laments that during the war there was no organized flow of military or political information from the allied governments to the supreme command in the Mediterranean, and that the latter was kept in ignorance of many developments connected with the allies, the home government, and the enemy. He states that even the Minister of Marine was often unaware of the existence of secret understandings among the various foreign offices in which France was a party. He shows that this situation had its effect upon the high command which was, therefore, not prepared for the complex rôle, more political than military, that it was to play and which, from the beginning, suffered from this handicap. The author does not, however, excuse the lack of a vigorous offensive on the part of the high command.

Captain Laurens traces the decline of the supreme command in the Mediterranean. He shows that the High Command seems to have contented itself with being organized and ready at a base to combat any Austrian sortie from the Adriatic or a German-Turkish sortie from Constantinople. It seems to have considered as its one mission the maintenance of this striking force and to have discounted all other activities in the Mediterranean. The French commander in chief jealously guarded his right to the tactical command of this striking force and generally remained with the main body at a base, patiently awaiting the day of reckoning which never came.

Other activities in the Mediterranean though nominally under the high command gradually drifted away from the control and supervision of the French commander in chief. The Dardanelles Expedition though joined in by French forces was distinctly a British affair, and later the whole Aegean Sea area came directly under a British vice admiral. When Italy entered the war, responsibility in the Adriatic was given to the Italians assisted by detached French units. An "Inter-Allied Mediterranean Ship Routing Office" was established at Malta under

a British vice admiral who was almost entirely independent of the high command. The details of the armistice with Turkey were arranged through a British admiral and the details of the Austrian armistice with an Italian admiral. The French high command was nowhere near and took no part directly in the negotiations though it attempted to do so indirectly. The reasons for all of the above are apparent in the book.

The author leads one to the conviction that the supreme command in the Mediterranean was not vigorously exercised and became one in name only.

THE MAHAN LETTERS: LETTERS OF ALFRED THAYER MAHAN TO SAMUEL A'COURT ASHE, 1858-59. Edited by Rosa Pendleton Chiles. Durham, N.C.: Duke University Library Bulletin, No. 4, July, 1931.

REVIEWED BY PROFESSOR ALLAN WESTCOTT

So far as is known to the reviewer, neither the Rev. C. Carlisle Taylor, the British clergyman who has written the only full biography of Mahan, nor any other student of his life and work, has made use of a large number of manuscript letters, covering a period of over fifty years, written by Mahan to his Naval Academy classmate, roommate, and lifelong friend, Samuel Ashe of North Carolina. When Ashe resigned in his third year at the academy he stood second in his class and Mahan third. Of the principals in the correspondence and all the individuals mentioned there, only Mr. Ashe now remains, ninety-one years of age, a prominent and beloved figure in his native state. Of the correspondence itself, the present volume of 121 pages contains only some thirty letters written by Mahan during his last year at the acadamy.

Written by a youth of eighteen—and Mahan, though keen in his studies, avid in his reading, and intellectually developed far beyond his years, was still very boyish in his outlook—the letters give a remarkably intimate picture of academy life in antebellum days, of his classmates, of his difficulties as a cadet officer, of social life in Annapolis and the yard, and above all of the inner character of the writer Mahan. The rigid uprightness and idealism of this character were already generally known, but not the sensitiveness and emotionality here revealed. On Mahan's side at least, the friendship between these youths of the North and the South was in this earlier period one of utmost devotion.

While the whole series of letters highly deserve publication not only as a record of a remarkable friendship but for their historical value, we may be thankful that the earlier ones at least are now made available, even though in a very limited issue; and we may be particularly thankful to Miss Chiles for her excellent work as editor.

In speaking of the historical value of the letters, we are thinking especially of the significance of Mahan as an eminent historian and a figure of great international importance over a period of twenty-five years before the World War. By his fellow naval officers this place of Mahan is not fully realized. Whether he was right or wrong in his doctrines—and the case has certainly not yet been proved against him—his writings exercised a weighty influence on the foreign and naval policies of his own and other countries in the period named. No fully adequate study of his career or of the extent and character of his influence has yet been made; and when such a study is undertaken, these letters—both those now published and still more those not yet published—will be invaluable.

ROPE YARNS FROM THE OLD NAVY. By Rear Admiral Caspar F. Goodrich, U. S. Navy (Retired). New York: Naval History Society. 1931. $5.00.

REVIEWED BY REAR ADMIRAL A. FARENHOLT (M.C.), U. S. NAVY

To my mind few publications touching the lighter side of naval life that have appeared in recent years are more delightfully entertaining than this small book from the pen of the late Admiral Goodrich.

That it should be written in a masterly style is assured by the literary accomplishments of an author who holds the degrees of M.A. and D.Sc., who was a gold medalist of the Naval Institute and a president of the Naval History Society; that it should hold interest for a follower of the sea is assured by the period of which it treats: the days of wooden ships and of men strange to this generation.

Admiral Goodrich was graduated with the only Naval Academy class which was wholly identified with the temporary location of Newport and not of Annapolis. He was asso-

ciated with the men of the old Navy who had taken part in the War of 1812, the Mexican War, and more intimately with those of the Civil War; Davis, Goldsborough, Dewey, Sampson, Mahan, names to conjure with, and he served with the old shellbacks with rings in their ears and tales on their tongues of battle, shipwreck, and sudden death.

These super-seamen who were masters of the art of handling sail and of reading the signs of the weather were his preceptors; these were the men who could enact the following scene which the Admiral so well portrays.

> Imagine the *Portsmouth* moving easily up the bay, the wind dead aft, filling her sails, from foresail to royals and winged out on either side, all her stu'n-sails! As we drew near, the upper works of the other men-of-war, American and foreign, were crowded with men amazed at the unprecedented spectacle of a ship coming boldly to her anchorage under her kites. . . .
>
> On went the *Portsmouth*, silent as the grave, not a word spoken, save by the leadsman in the chains, reporting in low tones the depth of water. One might have heard a pin drop on her deck. Every officer, man and boy was at his post, the necessary ropes in hand—all waiting for the preconcerted order. We glided like a ghost through the maze of craft, whose ship's companies watched us spellbound, as we headed for the berth above them all which our eagle-eyed commander had selected. We were to moor ship by dropping one anchor, running ahead, paying out ninety fathoms of chain, dropping the second and then heaving in on the first chain, veering on the second, until each stood at forty-five fathoms, when the ship would be held firmly at one spot like a horse tethered in a stall by straps from either side. This mode of coming to anchor is called a flying moor. It requires the utmost skill and judgment on the part of the captain for mistakes are easily made and hard to rectify. . . . We kept on quietly, past the bow of one frigate, just under the stern of another, until we reached the proper place.
>
> "Let go the starboard anchor."
>
> In came the stu'n-sails fluttering to the deck or the tops to disappear at once. Up flew the foresail and topsails, down came the jib, in came the topgallant sails and royals. The crew scurried aloft like monkeys, lay out on the yards, gathered up the canvas, hurried down on deck again to reach it, every mother's son of 'em, before the ship had forged ahead and planted the second anchor.

Admiral Goodrich closed his admirable book with these words:

> The old spirit survives on board our floating citadels of steel just the same as it was when a smart watch officer, or a captain who would manage the ship like a yacht, was the idol of the crew. Gallant bearing, just, yet kindly, treatment, competent knowledge on the part of him who wears blue broadcloth and gold braid still command the loyalty of him who wears blue shirt and flat cap. On this fact our naval discipline is, as it always was and always will be, firmly, irrevocably based.

An enjoyable and instructive treat is in store for the reader of this book.

PRINCIPLES OF FLIGHT. By Edward Archibald Stalker. New York: The Ronald Press Company. 1931. $6.00.

REVIEWED BY LIEUTENANT COMMANDER C. A. F. SPRAGUE, U. S. NAVY

An exposition of the theory of flight as comprehensive as this one written by Professor Edward A. Stalker, head of the Department of Aëronautical Engineering at the University of Michigan, may come as a distinct surprise to the beginner in his study of this newly recognized branch of mechanics; but to the aëronautical engineer and designer it will be welcomed with keen enthusiasm.

It is safe to say that no other book, covering this subject, contains within its covers such an advanced development of aërodynamics as that presented in Professor Stalker's work. He has reduced all aërodynamical phenomena, by the application of calculus, to conformation with existing physical laws and equations.

The presentation of his subject matter is logical, progressive, and thorough. First, he analyzes the nature of air forces on a rigid body, Pitot and Venturi tubes, types of flow, resolution of flow reactions caused by monoplane and wing combinations, factors affecting fluid forces, the stream function, velocity potential, and a discussion of the mechanics of flow and the air screw. A most useful chapter for reference follows at this point. It covers the important calculations for prediction of airplane performance. Professor Stalker then takes up with exhaustive consideration static stability, control and controllability, dynamic stability, and analysis of the spin.

Throughout each phase of his subject the author is most specific and detailed in his investigations; there is nothing of a generalizing nature in the book. In the calculated theoretical solutions he invariably compares the results with experimental tests conducted at such important centers of aviation research as, the National Advisory Committee for Aëronautics at Langley Field, Virginia, the Army Air Corps Experimental Division at Dayton, Ohio, the construction department, Navy Yard, Washington, D.C.,

and the British Royal Aircraft Establishment, with appropriate reference credit to each. A complete explanation of aviation symbols is included and this, together with an unusually fine choice of diagrams and illustrations, should be of great assistance to the student in reconciling the theoretical and practical aspects of the work in hand.

There are three main features of the book which make it stand out in its field, and show how comprehensive is the grasp the author has on his subject. First the logical sequence of complete development that characterizes the presentation. This is, of course, of special importance to the student. Second, the immense amount of reference work the author has consulted and incorporated, covering his ground with thoroughness and minuteness. This feature is of especial interest to the aircraft designer for he will not be under the necessity of looking farther for the information he may be seeking. Finally, and perhaps most notable, is the amount of recent information contained; the book is up to the minute. As the reviewer has stated previously, no other single treatise contains all the information that is encompassed in this volume. Much of it is available only in published memoranda issued in pamphlet form by our great national air laboratories. That recently noted spinning characteristic, antorotation, which has puzzled so many excellent pilots and designers is analyzed clearly and so, too, are explained, in their action from the point of view of physical analyses, such recent developments in aviation as the autogiro, the Handley-Page slot, and the floating aileron. There can be found no fault indeed, with the "freshness" of the work.

The student who masters all that this book contains, without doubt, will acquire a foundation of knowledge upon which to build the finished qualifications of the aëronautical engineer. The aircraft designer will find it invaluable as a ready source of reference.

AN ANEMOMETER FOR A STUDY OF WIND GUSTS. By R. H. Sherlock and M. B. Stout. Engineering Research Bulletin No. 20. University of Michigan. 1931. $1.00.

REVIEWED BY LIEUTENANT COMMANDER D. C. RAMSEY, U. S. NAVY

In the development of a new type of anemometer, incorporating the features of a pressure plate, magnetic transmitter, and twelve-element oscillograph, the authors have laid the foundation for an exhaustive investigation of the intensity, duration, and extent of wind gusts. While this instrument apparently has its most useful field of application in the study of the effect of wind gusts upon electric power lines it should be of interest to all concerned with engineering problems in which wind forces enter design calculations.

The authors deal first with an analysis of the characteristics and limitations of commercially available anemometers and then present detailed features of the pressure plate, electric circuit, and recording device of the new instrument. Calibration methods, speed of response, and error magnitude also are covered, as well as the results of actual tests made during a storm which occurred at Ann Arbor in September, 1930.

The development of a pressure plate, electric recording anemometer was inspired by the inertia errors inherent in commercially available types which render them unsuitable for measuring wind velocity over small intervals of time. As the time required for the damping out of any impulse given to the plate of the new instrument is but one-eighth of a second, the advantages of its use for refined observations are apparent. It appears to have many useful possibilities in its particular field of scientific research.

NAVY WEEK IN ENGLAND

FROM INFORMATION FURNISHED BY LIEUTENANT COMMANDER NORMAN VAN DER VEER, U. S. NAVY (RETIRED)

AUGUST 1 to 8 was "Navy Week" at Chatham, Portsmouth, and Devonport. At each of these ports was reenacted one or more incidents of past actions of the Navy. The program was thoroughly prepared and carefully rehearsed.

At Chatham there were a number of modern cruisers, destroyers, and four submarines of the L class, just back from China. The principal feature of interest to the crowd was a demonstration of the use of a Davis oxygen mask for escaping from a disabled submarine. A huge tank with glass panels was used for the demonstration, while near by an officer from one of the L boats gave a graphic description of the manner in which the crew escaped from the sunken *Poseidon*. On board the *Marshal Soult*, that monitor's operations during the war in bombarding the Belgian coast, were described.

At Devonport band concerts were given daily, and motion pictures showing incidents that occurred on the spring cruise of the Atlantic fleet were shown. The *Rodney* gave a life-saving demonstration of the use of breeches buoy from a tug anchored in the Hamoaze estuary. The aircraft carrier *Eagle* was visited by large crowds. A replica of the steamship *Ping Wo* was attacked by Chinese river pirates in costume, and passengers and crew were rescued by an armed boat's crew from the *Norfolk*.

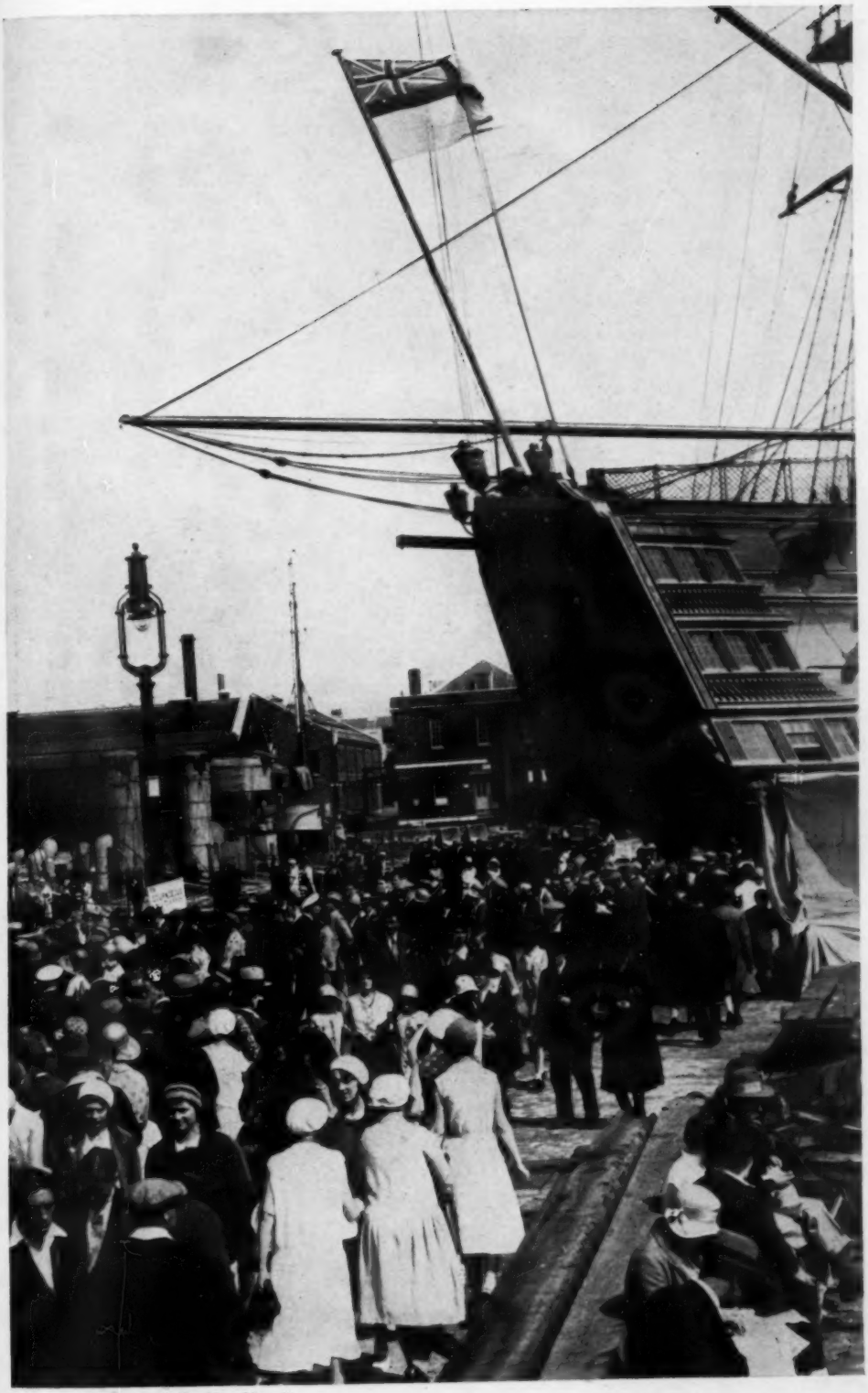
At Portsmouth marines dressed in the uniform of Nelson's day paraded and changed guard on board Nelson's old flagship the *Victory*. A model of the *Victory* was sailed in the basin. In a near-by basin a battle between a Q-ship and a submarine was reenacted. The submarine used for this was the *L-4*, which recently rescued the European passengers from the steamer *Irene* which was attacked by Chinese pirates. Chief Petty Officer Pitcher, V.C., who won his cross with Admiral Campbell in the *Dunraven*, broadcast a running commentary on the Q-ship battle. A number of battleships in dry dock attracted large crowds.

The attendance demonstrated the wisdom of having the event synchronize with the summer holidays. Official figures for the week's attendance were:

Portsmouth	149,246
Chatham	91,497
Devonport	75,763
Total	316,506

The week was considered very successful. Not only was a considerable sum raised for the Royal Navy charities, but also the public was enabled to see something of the Navy and to gain some appreciation of its work. As a Portsmouth paper commented editorially:

> This week the landsman learns many things, and learns them very pleasantly. He finds that we still have a Navy, that it is as efficient as human ingenuity can make it, and he can add to these discoveries the reflection that this wonderful organization is the greatest argument in the world for peace.

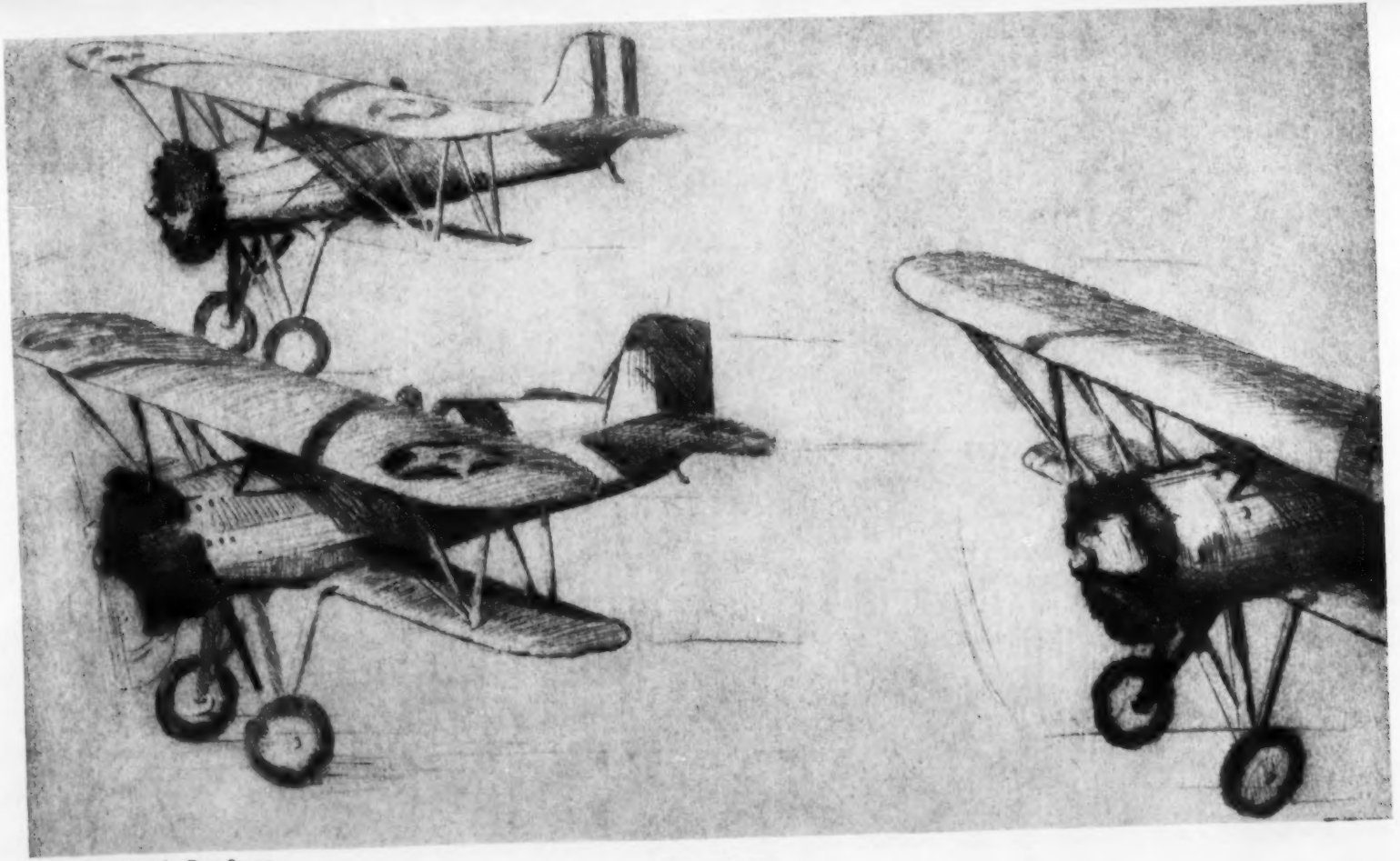


Courtesy "Portsmouth Evening News"

NAVY WEEK IN ENGLAND: CROWDS AT THE STERN OF NELSON'S FLAGSHIP

From an etching by Don Swann

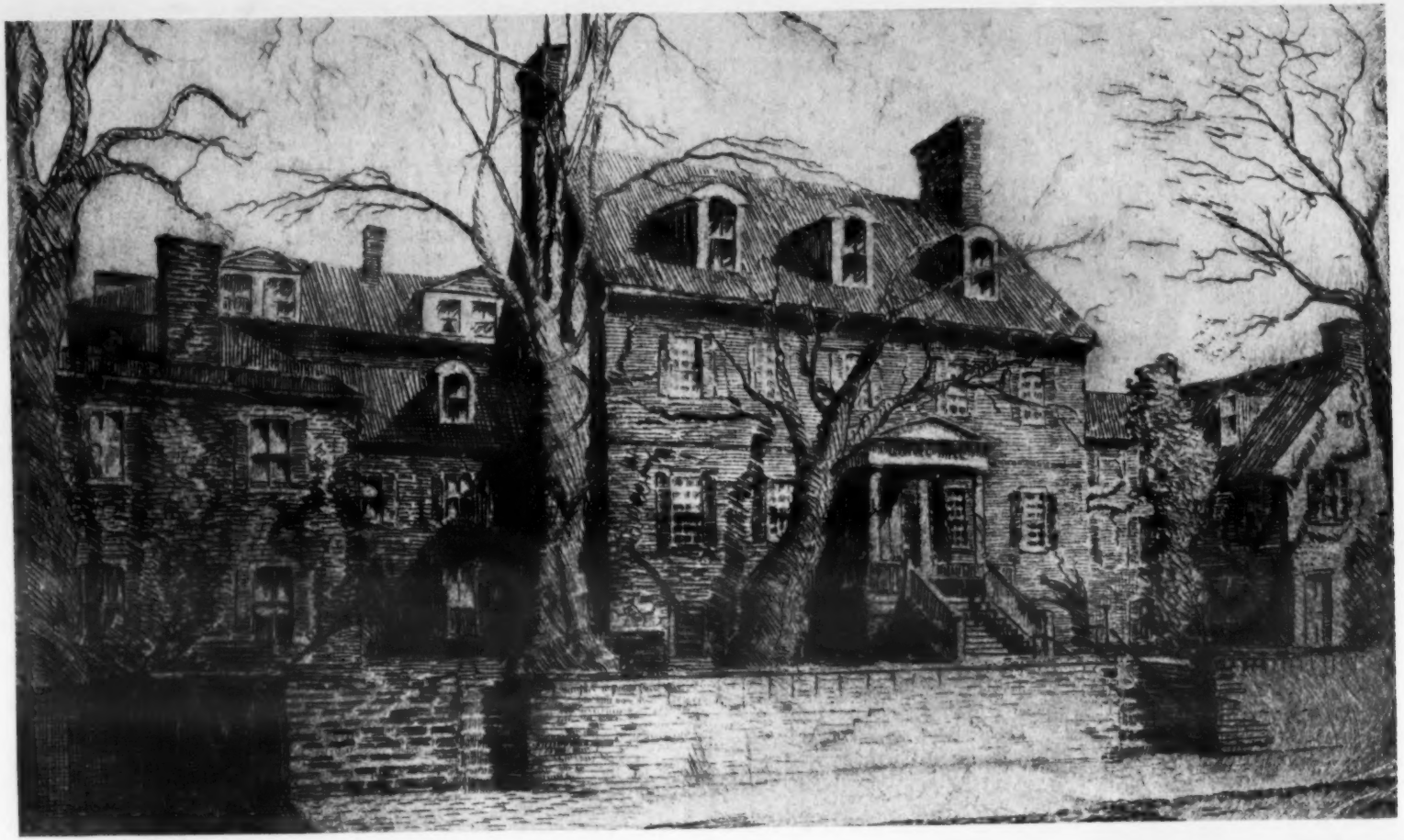
PUTTING OUT THE DECOYS



From an etching by Don Swann

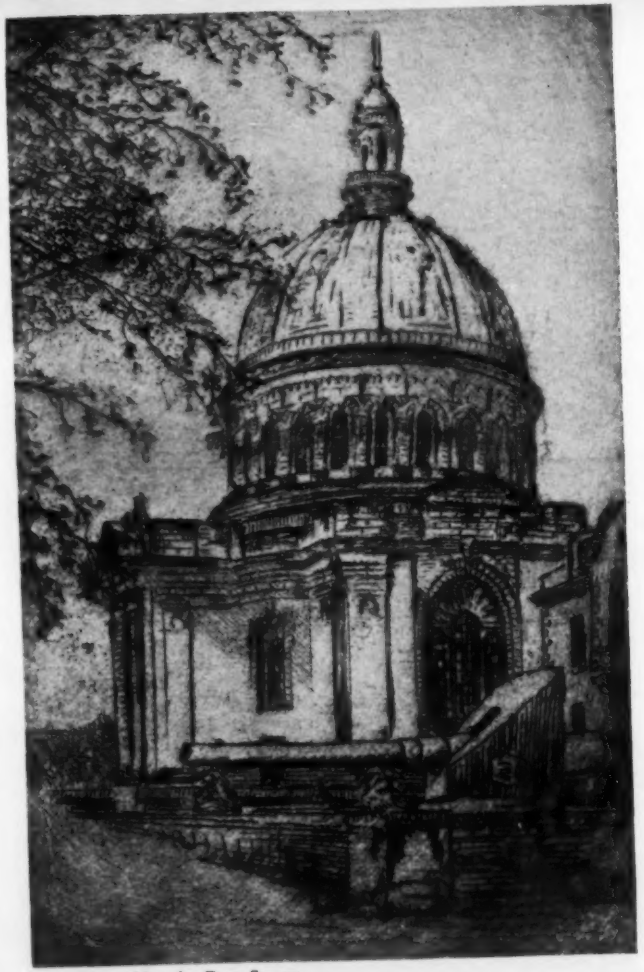
NAVY HORNETS

1742



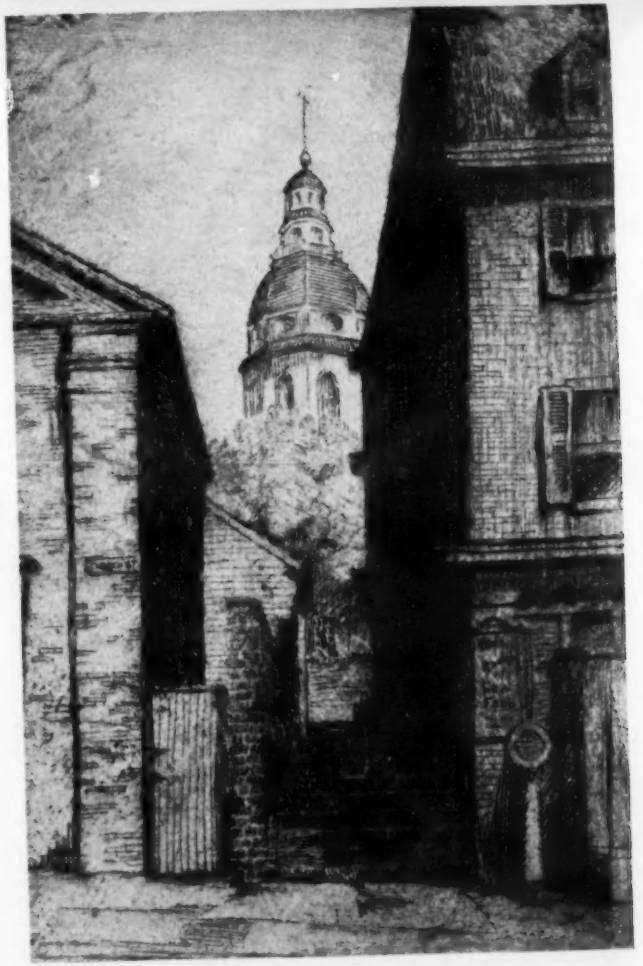
From an etching by Don Swann

CARVEL HALL

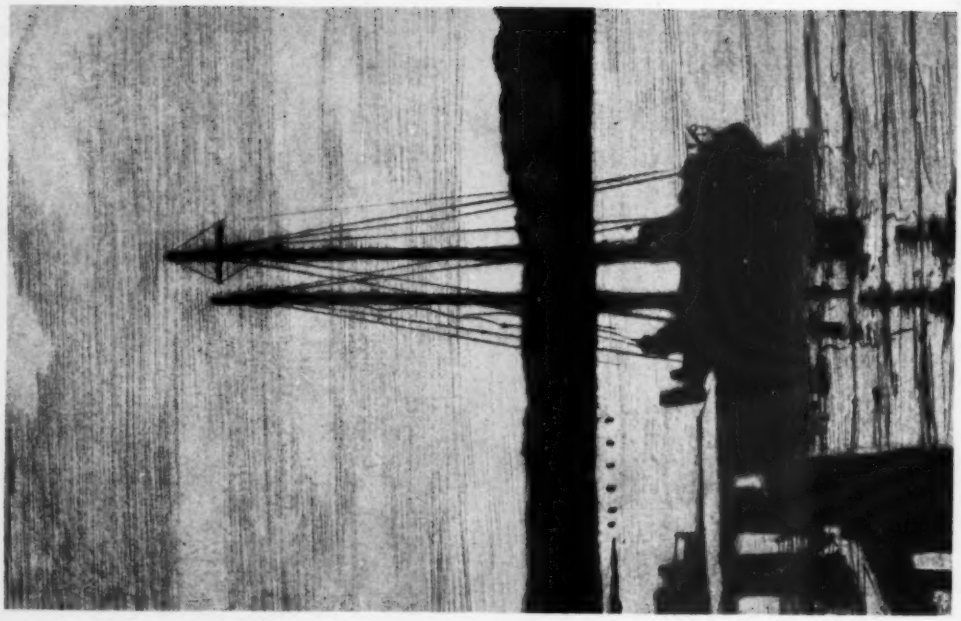


From an etching by Don Swann

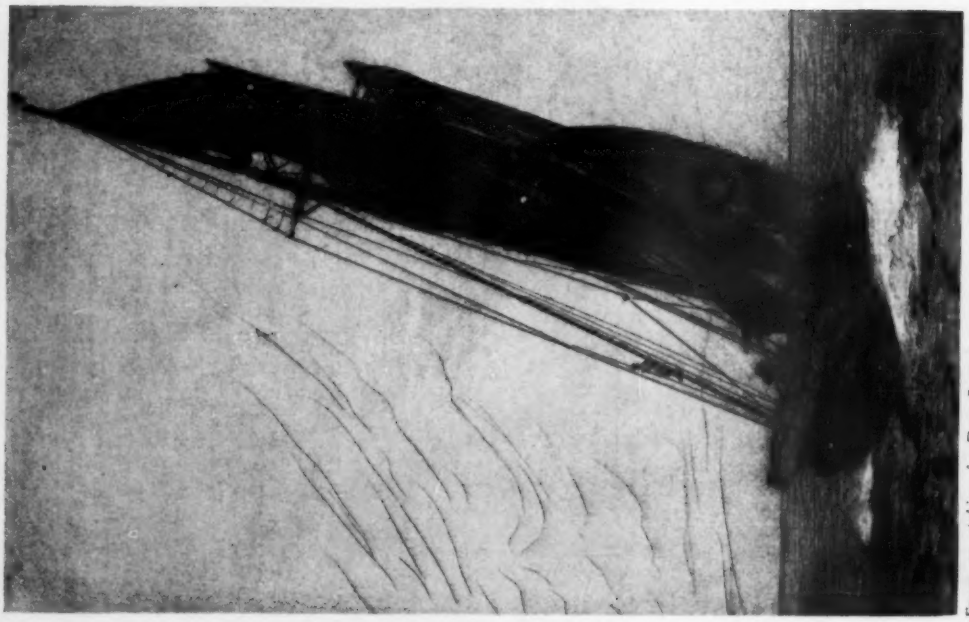
NAVAL ACADEMY CHAPEL



CHURCH STREET, ANNAPOLIS



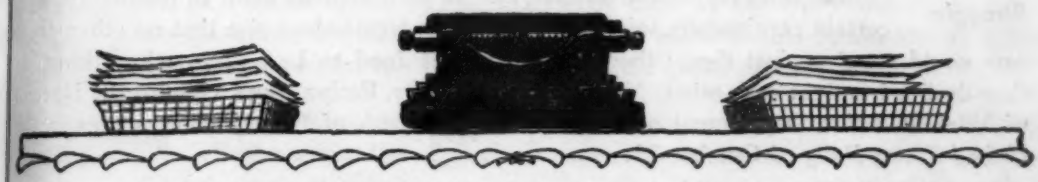
TWILIGHT



From an etching by Don Swann

SCUPPERS AWASH

SECRETARY'S NOTES



Don Swann Assists Navy Relief

The preceding pages show reproductions of some etchings by Don Swann. Some of our members may remember that last December we showed other work of this artist on pages 1167-69 of that issue. You may also remember that profits from the sale of those etchings went to the Navy Relief Society. The Institute can still furnish those etchings, matted, and ready to frame, in sizes and prices as follows:

Subject	*Plate Size*	*Price*
"Guantanamo Bay"	6⅜ x 10"	$5.00
"U.S.S. *Mississippi*"	6¾ x 7¾"	4.00
"Navy Wings"	6 x 7¼"	3.00
"An Eaglet Rises"	5 x 7¼"	4.00
"The Big Guns Speak"	5½ x 7⅜"	3.00
"A Day's Work Done"	7½ x 9¼"	5.00
A complete set of the above six etchings		20.00

Mr. Swann has made a similar generous offer this year. The Institute can supply, not only the etchings reproduced last year, but those shown in the preceding pages of this issue.

"Putting Out the Decoy"	6 x 9"	$5.00
"Carvel Hall"	6 x 7¼"	5.00
"Naval Academy Chapel"	3½ x 5¼"	2.00
"Church Street, Annapolis"	3⅝ x 5½"	3.00
"Twilight"	4 x 6"	2.50
"Navy Hornets"	5¾ x 7¼"	3.00
"Scuppers Awash"	4 x 6"	2.50

The Navy Relief Society will appreciate any orders that you send to the Institute.

Commerce Protection

The first naval bill in January, 1794, provided for "a naval force *adequate to the protection of the commerce* of the United States against the Algerine corsaire."* Has the mission of our Navy changed very much since that day? In the varied discussions pro and con as to the necessity for a Navy, its size, and its mission, one might do well to ponder over the words of that first naval bill; and along that same line one might review the causes which in the past have brought the United States into armed conflict with foreign powers.

Replacement or Increase

For many years the naval appropriation bills for new construction have used the term "increase of the Navy." But nowadays how often is such new construction for the purpose of increasing the size of the Navy? Is not this phraseology sometimes misleading, if not actually harmful? Would it

* Italics are the editor's.

not be better to indicate that the appropriation is for the replacement of worn-out or obsolete ships and material?

Struggle Man is a carnivorous animal; and all such animals fight. In prehistoric ages certain carnivorous animals grew to such tremendous size that no other creature could stand against them; there was plenty of food to be had for the taking, so they declined to fight each other. Nature fixed them. Dr. Emlyn Jones, chief of the Bureau of Vital Statistics, Department of Health, Commonwealth of Pennsylvania, writes in the *United States Daily* of October 28:

Contentment cheaply purchased is the great evil of mankind. It leads to inaction, to flabbiness of mind and body, and decay. When we cease to move, to struggle, to reach out for something, yet unaccomplished, we are ceasing to live.

Civilization has brought us automobiles, airplanes, elevators, telephones, and radios; everything is so arranged that we can extract the maximum of pleasure, with the minimum of effort. We won our civilization by battling with the forces of nature, by fighting for our food and a safe place to sleep; by developing powers of resistance and endurance, and building up new faculties, by a sturdy reaching out for things that were beyond us. The way to lose this civilization is by complacently enjoying it, by sitting in soft chairs, and having things brought to us.

The same kind of danger—that of contentment and its vices—which attacks the individual, often attacks a nation. Success or civilization, which, in the case of a nation, is the same thing, killed ancient Rome. She was ruined by too much civilization and decay followed.

Providence would seem to have ordained that the man who serves most shall reap most. Success is coming to mean service. Our greatest distinction as a nation has been won by actions, not words; by deeds, not dreams.

The "Merrimac" The Rev. Thom Williamson, Jr., writes us:

To complete your record of the U.S.S. *Merrimac* and the C.S.S. *Virginia*, as shown in the November issue of the PROCEEDINGS, it should be stated that I was informed by my father, the late Rear Admiral (Chief Engineer) Thom Williamson, U. S. Navy, that he and his own father, William Price Williamson (of both American Navies) discussed and made a sketch of an ironclad vessel with low freeboard and sloping sides, in Norfolk, Virginia, in 1858; and that this sketch was in line with a small model of a similar vessel made and floated by William Price Williamson and his half-brother, Commander Gabriel Galt Williamson, U. S. Navy, about the same time.

Peace Propaganda The World Peace Foundation recently issued a statement giving the impression that in 1930 the United States expended $553,378,505 on its Navy. Secretary Adams refuted this statement in no uncertain way. Why was such a statement made? Why does the World Peace Foundation and other such-like societies keep issuing misleading and false data on disarmament in the United States?

The appropriations for the United States Navy in recent years have been prominently brought to public notice in connection with the reduction to be made next year. It is very hard to believe that any person in the United States, even superficially informed on current events, could honestly believe that the United States expended over $550,000,000 in 1930 on its Navy. If the World Peace Foundation did not honestly believe that, then, in plain words, they were deliberately mendacious; if they did believe it, then they are so ill-informed and ignorant that they are utterly unfit to be leaders of opinion.

Rules for Submission of Articles (a) In typing manuscript use double space between lines.

(b) Submit articles in duplicate.

(c) In writing names of ships put only the initial letters in capitals and underscore the names. The underscoring signifies to the printer that the

word is to be in italics. The same applies to names of publication. Foreign words not Anglicized should also be italicized.

(d) In preparing tables and computations employing fractions, sub-numbers, etc., do by hand that part which cannot be made perfectly clear by the typewriter.

(e) When quotations are included in an article the editor should be assured by appropriate notation that the writer has carefully verified the quotations as presented.

Sea Training This issue contains two articles on merchant marine officer training. Both authors have had much experience in the merchant service and they approach the subject from different angles and reach slightly different conclusions. It is interesting to note that both emphasize the need of going to sea as early in life as possible. We recently heard an experienced officer say that he wondered whether we might do better with our own education problem if we got our midshipmen to sea earlier. He believed that there is still more than a grain of truth left in the "catch 'em young, tell 'em nothing, and treat 'em rough" policy.

Cruisers On page 1708 will be found some very interesting comment by Sir Herbert Russell, the eminent British naval authority, on Commander Brandt's article "Treaty Cruisers," published in the September issue of the PROCEEDINGS.

Our new 8-inch-gun cruisers do not seem to satisfy all naval students. The rôle that they may fill in war is subject to considerable debate. With a liner of 80,000 tons building on the Clyde and one of 70,000 tons building on the Loire, it would seem offhand that the commerce destroyer of the future would do well to have guns greater than 6-inch. On the other hand a large volume of 8-inch fire from such ship would not appear to be of great importance. Possibly we might see a reversion in cruiser types. Thirty years ago the armored cruiser had a displacement just about the same as the 10,000-ton treaty cruiser of today; it had a speed of 22 knots, and surely a speed of 33 knots could be got now from the same weight of machinery; it had a belt of about 6-inch armor; and a battery of four 8- or 10-inch and fourteen or sixteen 6-inch guns. In other words, it had the punch and long range of four guns, and the volume of fourteen or sixteen.

Peace Film An international committee is to select, this December, a film of peace for the world. The German entry has been completed; the following is from it:

> Sixty million human beings were forced to kill one another in the World War. Those sixty million fellow human beings, those four years of murderous work, those goods, squandered by the billion, would have been sufficient during a half century and forever thereafter, to put an end to all misery, if instead of being used for annihilation they had been used for the well-being of humanity.

Wheat is being left to rot in the fields of Kansas, coffee is being burned in Brazil, sugar is so cheap the grower cannot make a profit, there is at the moment a plethora of rubber, cotton, oil, metals—of almost everything, except logic from pacifists. Yet misery continues in the world. Perhaps other things as well as wars cause misery; perhaps the production of immense quantities of things from farm, mine, and factory does not necessarily cure "all the ills that flesh is heir to."

Russia May we suggest that the quotations on page 1714 from the *Japan Advertiser*, and the London *Times* might prove interesting reading? We by no means suggest that any armed conflict is in the immediate offing, but we do believe that it is well to

have more complete information than most of us now possess of the actual, as well as the potential, military strength of a country so important as Russia. And we should know too something of the issues that might bring such strength into active use. Modern social and political relations are too complex for us to feel that our remoteness or lack of important interests in that part of the world leaves us without concern as to what is happening there. The first half of the last century did not find more social unrest in the world than exists today. Let us keep ourselves informed of conditions abroad as well as at home, for today we can no more forecast the future than we could on the morning of June 29, 1914, when we read that Francis Ferdinand had been killed in Sarajevo.

The "Nautical Magazine"

It is interesting that a Glasgow publication, the *Nautical Magazine*, comes into its centenary in January, 1932. The Naval Institute extends its congratulations to this journal that has been serving mariners for so many years. Few magazines of any kind have such a large number of years to their credit. We look forward with interest to reading the January issue which we understand will have such articles as, "One Hundred Years of Sail," "Meteorology During the Last Hundred Years," and "History of the Last Hundred Years in Shipping."

What the Burnside Laboratory Means to the Shooter

The removal of the du Pont ballistic laboratory from the Brandywine to a location adjoining the powder manufacturing plant at Carney's Point, New Jersey, will definitely prove of benefit to the shooter.

The laboratory, recently renamed Burnside Laboratory, is constantly working towards the development of new and better powders. As a result of the relocation of the laboratory, the management and technical staff of the manufacturing plant can keep in close touch with all experimental work, so that, when the preliminary work is completed and the new powder is being produced on a semi-works scale, under the supervision of the laboratory, the plant personnel can become thoroughly familiar with all stages of the process. As a result, when new powders are placed in actual production there will be no unnecessary delay in placing them in the hands of the public. Furthermore, the laboratory can keep in close contact with the plant when the latter goes into production.

The finished powder is first tested in the plant laboratory and then submitted to Burnside Laboratory for final approval. Should any results be obtained whereby the two laboratories disagree, retesting routine is expedited and test methods completely standardized. In assignment of lots of powder to suit the special conditions under which the powder is to be used, the ballistic laboratory and the producing plant can cooperate to secure, in the highest degree, the best powder for the purpose.

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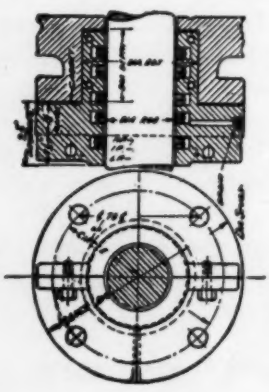

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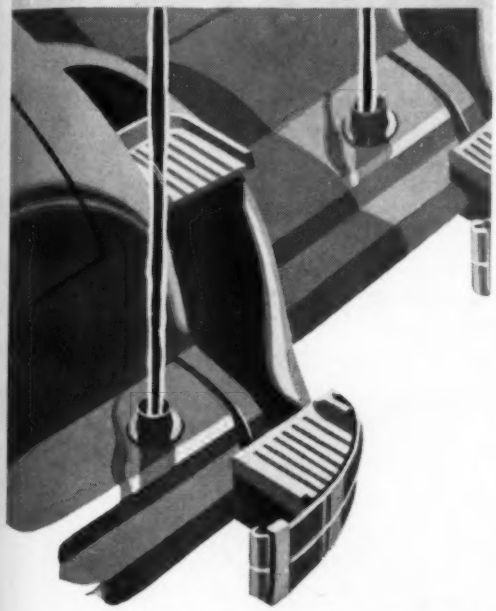

On every highway in the country, gasoline pumps are telling this story: Ethyl Gasoline is now the biggest-selling motor fuel.

For instance: On the Lincoln Highway between New York City and Philadelphia, a recent count showed 655 gasoline pumps, of which 203, or 31%, were Ethyl pumps.

The simple reason is that Ethyl is more than gasoline. It is good gasoline plus Ethyl fluid, which means: gasoline plus *combustion control.*

Inside the engine Ethyl fluid prevents the uneven explosions of gasoline that cause power-waste, "knock" and overheating. It holds combustion to the steady, powerful smoothness that develops the best performance of your car.

Ninety-five leading oil refiners testify to the importance of controlled combustion. They spent millions to equip plants to mix Ethyl fluid with gasoline and install Ethyl pumps in filling stations. Ethyl Gasoline Corporation, New York City.

ETHYL GASOLINE

The active ingredient used in Ethyl fluid is lead.

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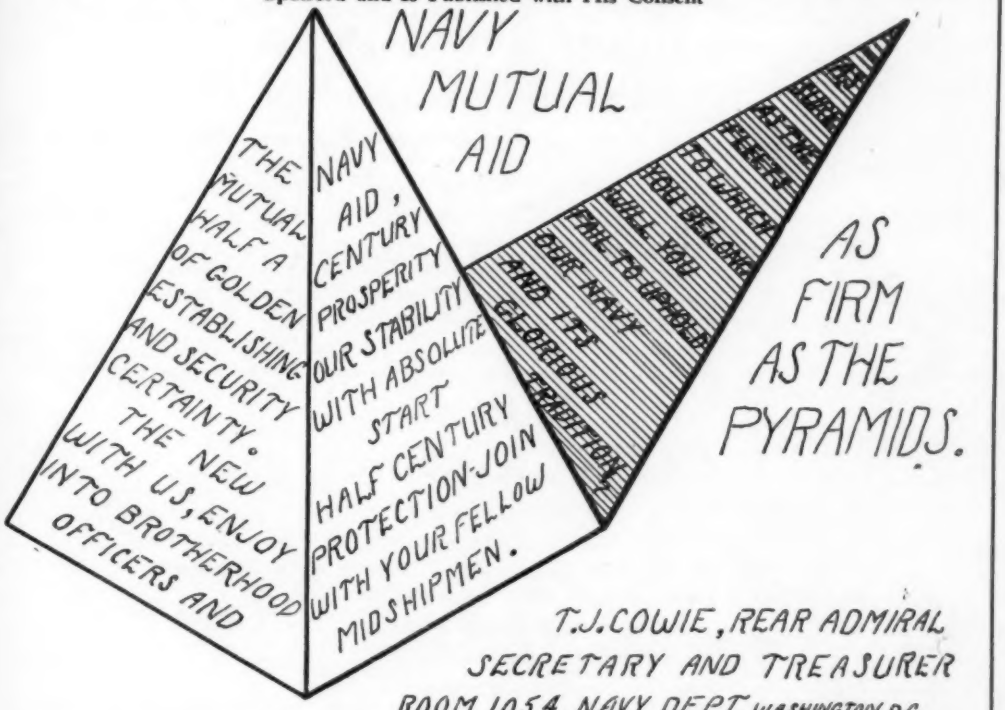
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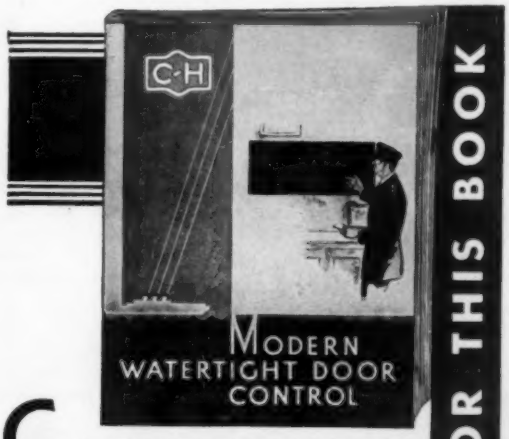

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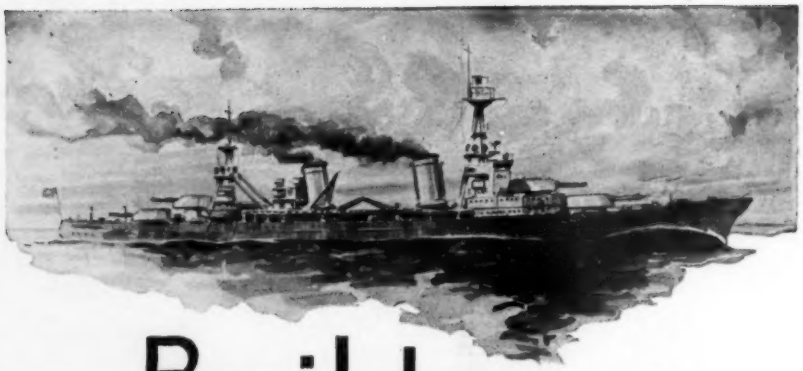

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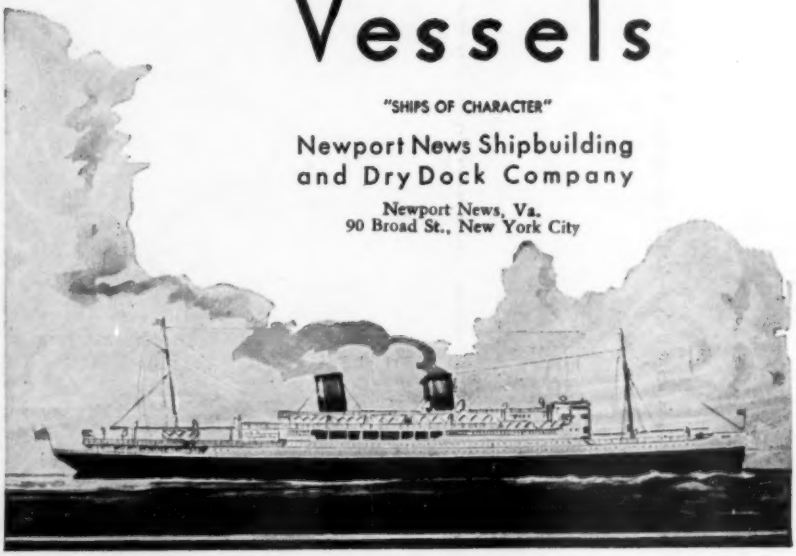

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2. Each competitor to send his essay to the Secretary-Treasurer in a sealed envelope marked "Prize Essay Contest." The name of the writer shall not appear on the essay, but instead thereof a motto. Accompanying the essay a separate sealed envelope will be sent to the Secretary-Treasurer, with the motto on the outside and the writer's name and motto inside. This envelope will not be opened until after the decision of the board. Essays must be received on or before January 1, 1932.

3. In addition to the "Naval Institute Prize," one or more essays may receive "Honorable Mention," if of sufficient merit to justify that award; or, in the event that no essay is adjudged of sufficient merit to receive the "Prize," the best essay submitted may receive "Honorable Mention" in lieu thereof.

4. In case one or more essays receive "Honorable Mention" the writers thereof will each receive a prize, the amount of such awards to be decided by the Board of Control in each case.

5. Announcement of awards will be made as soon as practicable after January 1, 1932.

6. Essays awarded the "Naval Institute Prize" or "Honorable Mention" will be published in the NAVAL INSTITUTE PROCEEDINGS as soon as practicable. Essays not awarded a prize may be published at the discretion of the Board of Control, and the writers of such articles shall be compensated at the established rate for articles not submitted in competition.

7. Articles should be limited to approximately 8,000 words, but shorter articles will receive equal consideration.

8. In event of the prize being awarded to the winner of a previous year, a gold clasp suitably engraved will be given in lieu of the medal.

9. All essays must be typewritten, double spaced, and submitted in duplicate.

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